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No. 1

REGRESSION OF OESTROGEN INDUCED MAMMARY TUMOURS IN FEMALE RATS FOLLOWING REMOVAL OF THE STIMULUS*

By R. L. NOBLE AND J. B. COLLIP

Montreal

THE appearance of mammary tumours in female rats following the implantation of oestrone pellets subcutaneously has been described in a previous paper.¹ In these experiments single or multiple pellets of oestrone in a total dose of from 4 to 10.5 mg. were implanted in female rats from 5 to 7 days old. The first distinctly palpable tumour was noted after 226 days. The tumours were usually multiple and showed slow and progressive growth, and were not situated near the location of the pellet. On histological examination the tumours exhibited marked cellular hyperplasia, but the growths were well localized and showed little tendency to invade the stroma or adjacent tissue. Metastases were not observed. These tumours appeared to be similar to those previously described by Geschickter,^{2,3} except that he noted metastases. In the present paper the observations on oestrogen-treated rats have been extended over a more prolonged period and certain characteristics of the mammary tumours are reported.†

METHODS

The tumour-bearing rats used in these experiments were of the same series previously described and were treated as formerly reported. Biopsies of various tumours have been made from time to time for microscopic examination. Transplants of the tumours have been made by the usual method into normal female rats of the same strain and into female rats previously treated with oestrone pellets. Homotransplants were made into the mid-line of the back so as

to avoid as far as possible all breast tissue. In some cases the pellets and immediately surrounding tissue were removed under ether anaesthesia. Crystalline progesterone dissolved in corn oil was administered by subcutaneous injection.

RESULTS

Tumour growth.—The mammary tumours have been found to grow slowly and continuously, provided the oestrone pellet is still palpable, until the death of the animal. The rats may live as long as nine months after the first tumour has appeared. Over such periods new tumours usually occur in other mammae until eventually the whole mammary area is a mass of tumours. The masses may reach an even larger size than those shown in Fig. 1, and in one case the tumours removed at autopsy weighed 134 g. Frequently, large tumours have been found to become soft, discoloured, and eventually to discharge through the skin. The resulting ulcers are of a chronic nature and show little tendency to heal.

Homœotransplants.—In 5 instances tumours selected because of their relative rapid growth have been transplanted into female rats of the same strain. In most cases these animals had previously received oestrone pellets implanted subcutaneously. It appeared that a transitory increase in size of (or around) the transplants occurred for the first 2 to 3 weeks. In no case, however, has a homœotransplant been found to grow in the expected continuous manner.

Homotransplants.—In 7 cases biopsy was performed on a tumour and a piece of it transplanted into the mid-line of the animal's back. Another piece of the tumour was taken for histological examination. In most cases a definite

* From the Department of Biochemistry, McGill University.

† Some of these findings were reported by R. L. Noble, C. S. McEuen and J. B. Collip at the Canadian Physiological Society Meeting, Toronto, November 2, 1940.

swelling was noted in the area of the transplant during the first few weeks, but did not continue. In two animals, however, definite growth of the transplant occurred. The period before palpable lumps in the back could be distinguished was long, being 7 and 16 weeks. Thereafter, the tumours continued to grow as long as the pellets remained intact. The position of the homotransplants in the back was so far from the mammary region that it is believed there was no possibility of these being primary mammary tumours.

Metastases.—Until recently metastases from the mammary tumours had not been observed. At autopsy the adjacent lymph glands, mediastinal glands, lungs, and liver have been carefully inspected for evidence of tumours and any suspicious areas have been sectioned. In only one rat have metastases been observed. This animal had the largest mammary tumours in this series, and these had been present for 9 months. At death multiple nodules from 1 to 3 mm. in diameter were noted in the lungs. On section these were found to be composed of tumour cells similar to those found in the breast (Fig. 2).

Histological appearance of the tumours.—In general, the tumours presented a picture of extreme cellular hyperplasia without any tendency to invade the surrounding tissue, as was previously described. In large tumours the centre may become necrotic and filled with débris, although the peripheral areas retain their cellular structure. Evidence of hæmorrhage into the necrotic areas was common. In some cases, especially where ulceration through the skin had occurred, microscopic examination of these older tumours showed a somewhat different picture. In these, areas of the tumours could be found showing penetration of the basement membrane and infiltration of the surrounding stroma by groups of tumour cells. Such a microscopic picture as seen in Fig. 3 could only be interpreted as indicating a malignant growth.

Effects of progesterone treatment.—Four rats with actively growing previously biopsied tumours received subcutaneous injections of 2.5 mg. of progesterone daily for a period of from 13 to 20 days. In every case the tumours stopped growing during treatment and in 3 instances regressed to less than one-half of their original size. Following cessation of the treatment with progesterone the tumours resumed their growth.

Effects of pellet removal.—The œstrone pellets were removed from 4 rats with rapidly growing multiple tumours, and a biopsy was taken at the same operation in 3 of the animals. The largest of these multiple tumours varied from 6 x 9 mm. to 9 x 21 mm. in size. The histological appearance of the tumours was similar to that described, and in one case typical infiltration of the surrounding tissue by tumour cells was noted (shown in Fig. 3). This animal also had a successful homotransplant, which exhibited an essentially similar microscopic appearance. Following removal of the pellets all the tumours stopped growing and regressed rapidly in size. A gradual softening of the tumours was noted a few days after the operation, and in two weeks they were approximately one-quarter of their original size. After 3 weeks only slight residual thickening of the mammary tissue was palpable. In one rat which had a large ulcer through the skin from an underlying tumour of some 4 weeks' duration, healing was complete in 10 days. One of the above rats died 37 days after removal of the pellet, and microscopic examination of the region where the tumours had previously existed showed that the mammary tissue had practically returned to normal except for areas of degenerated cells undergoing phagocytosis. In two of the rats new pellets were implanted 8 weeks after the tumours had regressed. After 6 weeks new tumours appeared and continued to grow until the animals' death. In the remaining animal no return of the growth had occurred after 18 weeks.

Pituitary adenoma.—The pituitary gland was consistently found to be increased in weight in rats killed during the first year after the insertion of the œstrone pellets. In two cases chromophobe adenomas of the anterior lobe of the pituitary gland were noted. This observation was similar to those previously reported by numerous other workers following the treatment of rats with œstrogens. With more prolonged treatment, however, the incidence of adenoma of the pituitary was markedly increased so that nearly all animals exhibited these tumours. These results may be seen in the Table. The glands were found to reach an enormous size, compressing the overlying brain, giving rise to subsequent symptoms and frequently causing death of the animal. Hæmorrhages were frequently noted into the adenomas and must have contributed to the weights recorded. Extracts of such adenomas have been tested to determine

TABLE
RELATIONSHIP BETWEEN THE DURATION OF TREATMENT
WITH OESTRONE AND PITUITARY SIZE

Months after oestrone pellet	Fresh pituitary weight, $\mu\gamma$.
7 to 8	16: 24
9 to 10	24: 25
10 to 11	20: 23: 32: 36: 41: 324
11 to 12	14: 15: 32: 54
12 to 13	18: 28: 380
13 to 14	27: 33: 35: 51: 52
14 to 15	100: 245: 270
16 to 17	99: 225: 255: 310
17 to 18	165: 170
18 to 19	128: 175: 250: 365
19 to 20	175: 245: 300: 320
20 to 21	12: 124: 170: 180.

their hormone content, and these results will be reported in a further publication.

Other observations.—In a new series of animals a few palpable tumours have appeared. These preliminary observations indicate that it is not essential to start treating rats at a very young age to produce tumours, as these have now been noted using rats 28 days old. Tumours have also been found in male rats and have followed the implantation of pellets of oestradiol as well as oestrone.

DISCUSSION

That tumours may be readily produced in the mammary glands of female rats has been confirmed in the present report. The failure of other workers to produce such growths would appear to be related to the duration of treatment and the form of administration of the oestrogen. The use of pellets of oestrogen seems to be the most effective manner for the production of tumours. McEuen^{4,5} treated rats for prolonged periods by daily subcutaneous injection of oestrone (30 micrograms daily), or oral administration of 1,000 to 1,500 international units daily of crude oestrogen, but noted tumours in only two animals. Using the method of pellet treatment, a few milligrams of oestrone usually remained up to 18 months after implantation, so that the total dose absorbed to produce tumours was only from 3 to 9 $\mu\gamma$. over this prolonged period. It would appear, therefore, that the absorption of some 40 to 50 $\mu\gamma$. of oestrone a week may result in tumour formation when the pellet method of administration is used.

The experimental production of mammary tumours in a species of animal not normally susceptible to such growths would appear to be of possible interest in a consideration of the etiology of breast cancer. In general, these tu-

mours showed an orderly and progressive growth over a relatively long part of the life-span of the rat. Their infiltrative properties were low, since invasion of proximate lymph glands or adjacent muscle was not noted. The tumours were readily dissected free from their connections except where ulceration through the skin had occurred. On histological examination, the tumour cells were limited by a well defined basement membrane, although mitotic figures were observed and hyperplasia was extreme. The appearance of these tumours varied markedly, as even in different tumours in the same animal typical scirrhus types of growth or squamous cell metaplasia with pearl formation might be present. In a few cases, however, it has been found that tumour cells may infiltrate into the stroma, giving a typical picture of a malignant growth. Also, in the one case described at an advanced age metastases to the lungs occurred. Transplantation of the tumours into other pellet-bearing rats has not been successful, but litter mates were not available for this experiment. On the other hand, homotransplants have taken in two animals. The picture presented indicated that all these changes were part of the same process and showed no evidence of any sudden alteration in the characteristics of the tumours which might be interpreted as an abrupt malignant change. The age of the tumour did not appear to be a factor, as the one shown in Fig. 3 had been present for only three months and the homotransplant from it showed an essentially similar picture. On the other hand, tumours of twice this age and many times the size may show little invasive tendency. Tumours produced in rats by oestrone pellets, therefore, may exhibit most of the features of cancerous growths, although the changes suggest a comparatively low grade of malignancy.

The behaviour of the tumours after progesterone treatment or pellet removal appears to be contrary to what would be expected from a consideration of the usually accepted criteria for malignant tissue. The ability of progesterone to antagonize many of the effects of oestrone would suggest that this substance might prevent the tumour growth from oestrone pellets. Such was found to be the case, but this effect was much less marked than that following removal of the oestrone pellets. As has been described, complete regression of all the tumours in 4 rats occurred rapidly following the withdrawal of oestrone. It is significant that one of the ani-

mals had a homotransplant and a primary ulcerated mammary tumour exhibiting a histological picture of malignancy, and that both growths completely disappeared. McEuen⁴ has previously noted that the histological appearance of a mammary tumour produced by oestrone injections changed from one of malignancy to a benign one on cessation of treatment. It would appear, therefore, that under these experimental conditions changes in the breast indicative of low-grade malignancy may be produced from a

justifiable until these preliminary experiments have not only been repeated but greatly extended in nature.

SUMMARY

The observations on tumours induced in female rats by oestrone pellets have been extended over prolonged periods. Continuous growth of the tumours occurred until the animal's death, provided the pellets remained intact. Attempts to transplant the tumours into other rats with

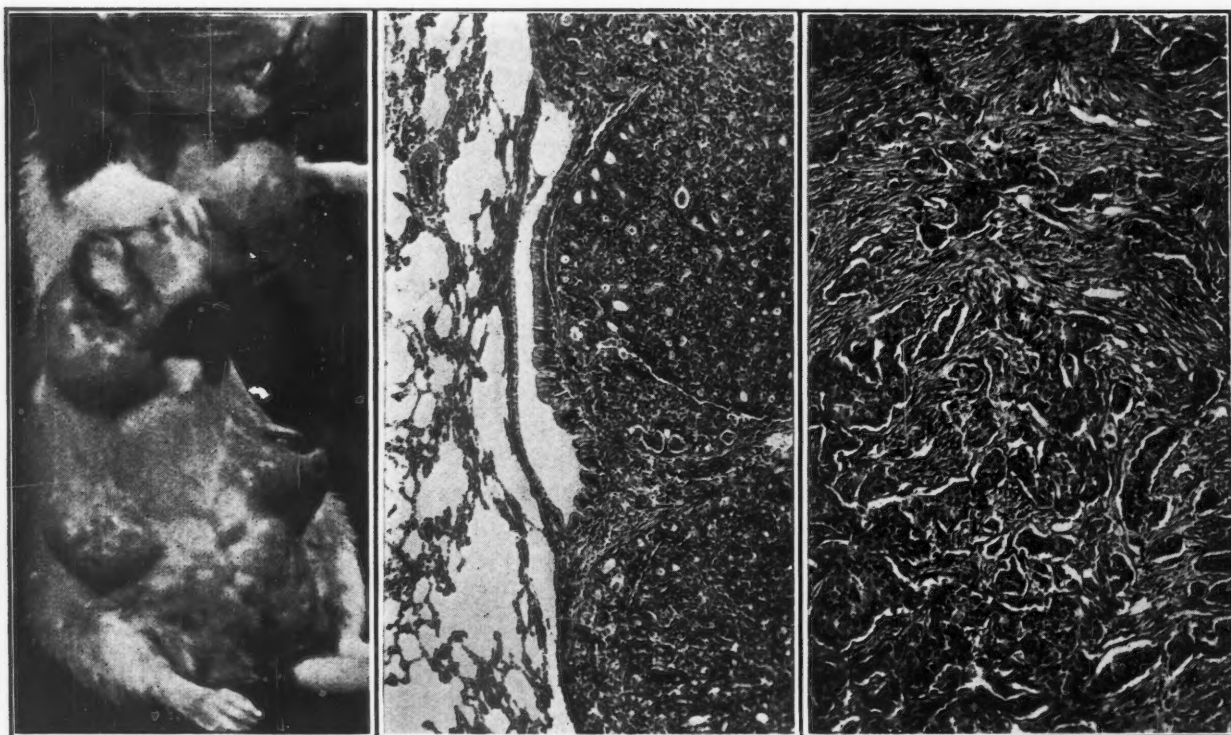


Fig. 1

Fig. 2

Fig. 3

Fig. 1.—Advanced stage of mammary tumours produced by oestrone pellets. Fig. 2.—Lung metastases from mammary tumour. Fig. 3.—Infiltration by mammary tumour cells in breast.

continuous stimulus, oestrone. Removal of this stimulus causes, not only a cessation of the growth of the tumour, but its eventual disappearance. These observations—that malignant changes may be induced by the stimulus of a chemically pure hormone, that a continuation of the stimulus is essential for the maintenance of these changes, and that tissue exhibiting malignant characteristics may readily return to normal—would appear to offer a wide field for speculation on the etiological factors suggested for malignant processes, and on some of the properties ascribed to malignant tissue. It is felt that neither generalizations to other forms of malignancy nor possible application of the above results to therapeutic procedures are

pellets failed, but in 2 cases homotransplants grew successfully. Lung metastases were found in one rat with advanced tumour formation. Histologically, the tumour cells usually exhibited an orderly type of growth and little tendency to invade the stroma. In a few cases, however, cellular infiltration of a typical malignant appearance was encountered. Treatment with progesterone of 4 rats bearing tumours was followed by cessation of tumour growth. Removal of the oestrone pellets in 4 animals caused complete regression of all the tumours previously present. In one case the disappearance of a homotransplant and an ulcerated primary mammary tumour exhibiting a histological picture of malignancy occurred. Enlargement of the

pituitary gland usually followed oestrogen treatment and a large hæmorrhagic adenoma of the anterior lobe was encountered in 2 rats during the first year of treatment. After longer periods, however, nearly all animals were found to have large pituitary adenomas.

Preliminary observations in a new series of animals suggest that tumours may occur when pellets are implanted in female rats 28 days of

age, that they may be produced in male rats and after implantation of oestradiol pellets.

We wish to thank Mr. C. Larsen for his technical assistance in these experiments and Mr. K. Nielsen for taking the photographs.

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A NEW METHOD OF TREATMENT OF DEPRESSED FRACTURE OF THE ZYGOMATIC BONE*

BY HAMILTON BAXTER, M.Sc., M.D., D.D.S.

Montreal

FRACTURES of the zygomatic bone are becoming more frequent, largely due to the increasing number of motor accidents. The driver or passenger in the front seat is thrown forward by the impact of the collision, and the face is flung violently against the steering wheel or instrument panel with resultant severe injuries. Industrial accidents and injuries received on the playing field are responsible for many more such fractures. The zygoma occupies

a prominent position among the bones of the face and bears the brunt of resistance to violence from many directions.

Anatomical features.—The zygoma is a quadrangular bone which contributes to the formation of the orbit, the prominence of the cheek, and parts of the temporal and infratemporal fossæ. It has four processes—temporal, fronto-sphenoidal, orbital and maxillary, and they articulate with four bones—frontal, sphenoidal, temporal and maxillary. To it are attached the masseter and temporal muscles and certain of the muscles of expression.

Signs and diagnosis.—Typical fractures of the zygoma are usually readily diagnosed due to the peculiar facies which results. There is a depression in the zygomatic and infraorbital regions on the affected side and a lack of expression. This is most evident before the traumatic effusion has developed or after it has subsided. Anæsthesia of the skin area supplied by the infraorbital nerve is frequently present. Normal movements of the jaw may be restricted by the depressed fragment which impinges upon the coronoid process of the mandible. Mobility and crepitus are rare, but by palpation abnormal irregularity of the orbital margin may be detected, and oral examination reveals an unnatural resistance to the finger passed up along the ascending ramus of the mandible. Diplopia may be present if there is much damage to the floor and margin of the orbit. A visual test and examination of the eye on the affected side should be made on admission and a note of the findings recorded. In a recent case a fragment of the orbital margin perforated the globe and it

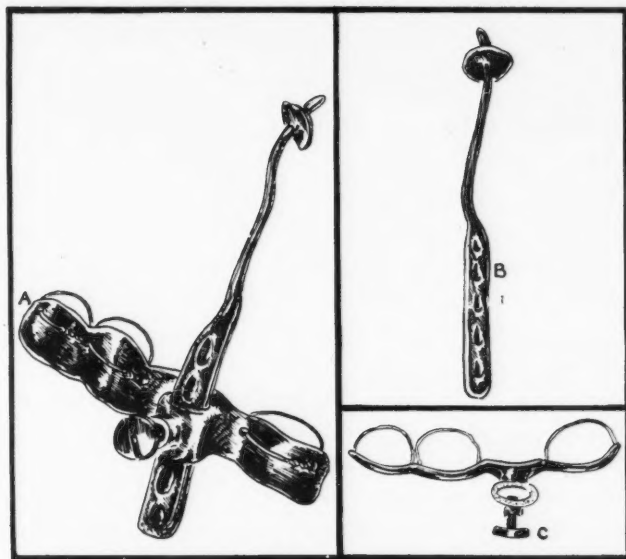


Fig. 1.—The splint in detail. The band (A) with a sleeve into which the prop is inserted. The prop (B) is longer than necessary to allow for adjustment in a vertical direction; any excess may be cut off. After the prop emerges from the sleeve it should lie close to but not touching the bone except at the distal end. The screw (C) inserted in the sleeve, when tightened, engages in one of the small holes drilled in the prop, thus maintaining the fractured bone in correct anatomical position until sufficient callus has formed to support it.

* From the Department of Surgery, Royal Victoria Hospital, Montreal.

was necessary to have an enucleation performed. Unilateral epistaxis is often noted, and since the maxillary sinus is usually filled with blood an acute maxillary sinusitis may develop. Finally, conjunctival hæmorrhage and ecchymosis of the skin are frequently present.

In any case in which a fracture is suspected x-ray films should be taken to confirm the physical examination, to show the degree of displacement and type of fracture present, and to provide proof of the condition on admission to the hospital. Films taken in the maxillary sinus position and submento-vertex position are most satisfactory, although special studies may be necessary in unusual cases.

VARIETIES OF FRACTURE

1. Though the body of the zygomatic bone is compact and firmly constructed it rests on fragile supports, and for this reason the fronto-sphenoidal, orbital, maxillary and temporal processes are the usual sites of fracture. Thus the most common fracture is that in which the bone is separated from all its attachments and displaced *en masse*. While the trauma may be received from very divergent angles, the most frequent application of force is approximately at right angles, with displacement of the bone inwards and downwards into the maxillary sinus. In the course of the displacement the zygomatic bone acts as a hammer and crushes the frail anterior and posterior walls of the antrum. When this occurs the bone cannot be impacted in its original position due to lack of bony support and it sinks into the sinus as soon as the elevating instrument is removed. In this type of fracture many methods of treatment have been advocated but the most satisfactory is that in which the bone receives firm support until sufficient callus has bridged the fracture lines to maintain the zygoma in its anatomically correct position.

2. The next most common fracture is that in which the zygomatic arch receives the full force of the impact. Usually a portion of the arch is driven inwards and downwards.

3. Finally, the zygoma may be comminuted and consist of two or more fragments. These may be displaced into the orbit, infratemporal fossa or maxillary sinus. Quite frequently when sufficient force has been applied to damage the bone so extensively there is a coexisting laceration of the skin which exposes the fragments to a vary-

ing degree and thereby facilitates treatment by permitting direct wiring of the bone.

TREATMENT

Many different methods of treatment have been suggested for depressed fractures of the zygomatic bone. The use of hooked forceps inserted through the skin; hooks, screws and elevators applied by means of external incisions in the skin or muco-buccal fold in the mouth have been recommended. Reduction of the fracture has been accomplished by elevators inserted into the maxillary sinus through the canine fossa or an intranasal window and packing of the sinus with gauze. Certain of these methods are applicable only to a specific type of fracture and others cause unnecessary scarring or danger of severe infection. Use of an unsuitable method in a given case may result in failure to obtain satisfactory reduction of the fractured bone, or, worse still, to maintain it in a normal position.

1. In the first type of fracture, in which the zygoma is separated from all its attachments and displaced *en masse*, usually downwards and medially into the maxillary sinus, certain methods of treatment are commonly used. The Gillies' method¹ of making a small incision in the temporal region within the hair line and passing an elevator downwards on the surface of the temporal muscle until it lies deep to the displaced bone may be used. By careful levering the bony mass may be elevated. Straith² uses a heavy antrum trochar which is passed through the oral mucous membrane above the last molar tooth and behind the zygoma. Upward traction on the trochar aided by external manipulation usually results in satisfactory reduction. Lothrop has described a method in which an incision is made in the muco-buccal fold and an elevator inserted into the antrum through the fracture line. The depressed bone is elevated and the maxillary sinus is firmly packed with iodoform gauze. This latter method has a distinct disadvantage in that a chronic maxillary sinusitis almost invariably develops.

If the bone can be impacted against the jagged margins of its attachments by any of these methods it will usually stay in place. However, as is often the case, if the anterior and posterior walls of the maxillary sinus are badly comminuted, or if reduction is delayed, the fragment slips back into its depressed position as soon as the elevator is removed. Under these circumstances it becomes necessary to provide a positive



Figs. 2A, 2B and 2C.—The three commonest types of fracture of the zygomatic bone and arch are shown in order of frequency. The new splint described is used in types A and C. **Fig. 3.**—The contoured band of splint containing a sleeve with an adjustable screw is wired to the teeth. A hole is drilled in a suitable part of the body of the zygomatic bone, about one-eighth of an inch deep. The prop is then passed through the sleeve and the upper end which carries a small round guard is inserted in the hole drilled in the zygoma. After the fragment has been elevated into its correct anatomical position the set screw is then tightened. **Fig. 4.**—These elevators are so shaped as to be most effective in elevating the fragments in a type B fracture of the zygomatic arch.

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support to retain the fragment in an anatomically correct position until sufficient callus has formed to retain it.

For this purpose I have devised a metal splint* which is wired to the teeth on the same side as the fracture and supports the fragment until union has occurred (Figs. 1 and 3). An incision is made in the muco-buccal fold and the soft tissues in the canine fossa are elevated from the maxilla by blunt dissection until the fracture line and lower part of the zygoma are exposed. A small hole is drilled in a suitable part

2. The second type of fracture, in which the zygomatic arch is crumpled, is most efficiently treated by the method of Gillies in which a small incision half an inch long is made over the temporal muscle through the skin and temporal fascia. A long thin elevator is then slipped downwards on the surface of the temporal muscle until it lies deep to the displaced fragment which may be lifted into correct position by careful levering movements and external manipulation with the fingers. The elevators shown in Fig. 4 have proved very useful in this manœuvre.

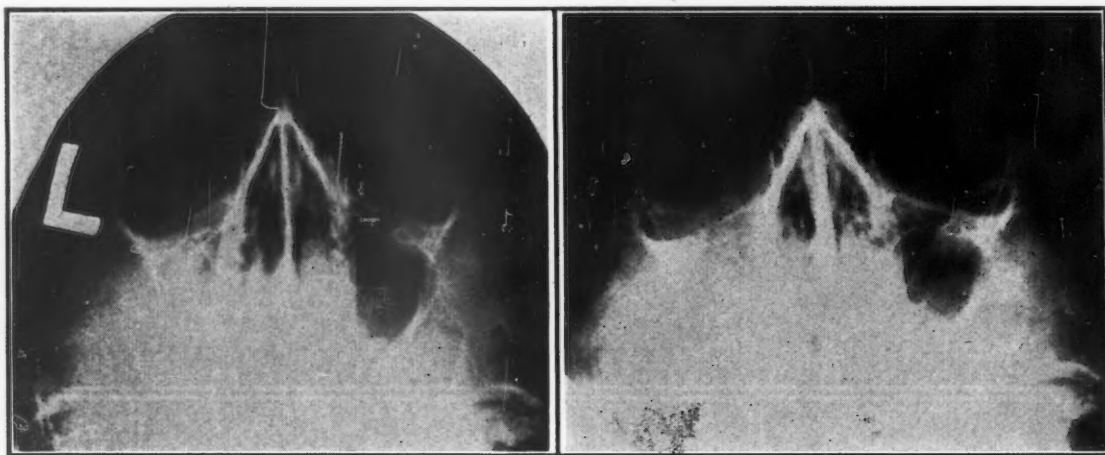


Fig. 5.—The x-ray films show a fracture of the left zygomatic bone before and after reduction and support by the metal splint.

of the zygoma and a round wire prop of stainless steel is passed through a sleeve in the splint and pushed up until it engages in the hole previously drilled in the zygoma to receive it. An elevator is then slipped through the fracture line in the antral wall and the bone lifted into its normal position as determined by palpation and, if necessary, by x-ray. The prop is fixed solidly in position by tightening the set screw which is inserted in the sleeve of the metal splint. The incision is closed with interrupted sutures. If it is thought advisable, intranasal drainage of the antrum may be provided at this time. The appliance may be left in place for two to four weeks if necessary without causing undue reaction in the tissues (Fig. 5).

One prerequisite is the presence of several teeth in the maxilla on the same side as the fracture. However, since the majority of these fractures occur in people under middle age, this requirement is almost always fulfilled.

* These splints are designed for the left or right side of the maxilla and are obtainable from the Provincial Laboratories.

3. Finally, if the zygoma is comminuted, quite frequently there is a coexisting laceration of the skin, through which the fragments may be united by drilling small holes and wiring the fragments together with No. 28 gauge stainless steel wire. Especially advantageous is the fixation which may be gained in this way in the region of the frontozygomatic suture. If no laceration of the cheek exists the fragments may be reduced as in the first type of fracture and supported by a Y-shaped prop, which may be adjusted to suit a particular case of this type. The great advantage attained by this type of splint is that no foreign body remains in the maxillary sinus to act as an irritant and cause a chronic suppurative sinusitis.

SUMMARY

1. The three main types of fracture of the zygomatic bone and arch are outlined with appropriate treatment for each.

2. A new splint is described which is adjustable to various sizes and is provided for fractures of the left or right zygoma.

3. Firm, adjustable support is obtained without resort to external incisions or insertion of foreign material into the maxillary sinus.

4. The splint may be allowed to remain in position for two to four weeks without causing discomfort or undue irritation until the callus is sufficiently strong to retain the fragments, when it may be easily removed.

5. In using the splint it is necessary that the patient should have several posterior maxillary teeth on the same side as the fractured zygoma, but this requirement is almost always fulfilled.

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THE CHOICE OF SKIN GRAFTS IN PLASTIC SURGERY

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WHEN a part of the body is lost there is a wide choice of both tissues and methods of grafting available for its reconstruction. Skin, cartilage, bone, nerve and fascia may be grafted with reasonable assurance of success and by a variety of procedures. Faced with a loss of tissue, one estimates its kind and amount, and plans by what tissue, and by what method, it will be restored.

The development of skin grafts has been interesting, and dramatic and many ingenious procedures have been devised. They are divided broadly into two main groups: (a) the free grafts, and (b) the pedicle grafts. Free grafts are those which are severed completely from their source of nourishment and depend for their existence on a capillary oozing of serum from the graft bed. This group includes the large thin and thick split grafts popularly known as Thiersch grafts, the small thin and thick split grafts spoken of as "pinch" grafts and the full thickness or "Wolfe" graft. It also includes the "grille"¹ and "sieve"² grafts recently introduced by various workers. The pedicle grafts are of greater bulk, and contain an amount of subcutaneous tissue and at no time are they separated from a carefully nursed blood supply. These are the pedicle grafts, delayed pedicle grafts, and tubed pedicle grafts.

In a study of skin grafts it is well to bear in mind the skin structure (Fig. 1). The epidermis with its squamous and basal-celled layer and papillæ, the cells of which are accustomed to receive their nourishment by capillary phenomena, contains no vessels. The derma or corium, on the other hand, contains blood vessels

and the accessory skin structures in a connective-tissue reticulum. Beneath are fat, fascia, and other subcutaneous structures. With this in mind it is understandable that the thinner the graft or the more confined to epidermal structures, the greater chance it has to live by free grafting. The cells are used to living by capillary phenomena and may well do so on transfer to a slightly altered site. On the other hand the thicker grafts, containing greater amounts of derma, are more highly specialized and used to an organized blood supply, and so the thicker the graft, the more precarious it is from the standpoint of free grafting. When more than epidermis and derma are used, it becomes necessary to use the pedicle type of graft.

The *thin split skin graft*.—This is commonly known as the Thiersch or Ollier-Thiersch graft, or thin razor graft. Blair and Brown³ introduced the terms thin and thick split skin grafts which are descriptive of splitting away the skin with a razor or knife parallel to the surface at various depths. The thin split graft aims to take away the epidermis in a tissue-paper-like sheet with little or no derma (a in Fig. 1). The donor site bleeds only in fine punctate points and heals rapidly and completely. It has a high percentage of takes and is useful in infected areas, but it is rather poor in appearance and may be glazed and shiny with no accessory skin structures. It tends to shrink and is useless where there is deep loss of tissue and scar contracture or on areas that must bear any pressure. Its greatest use is in lining mucous cavities such as the eye socket or mouth, where it seems to take on the characteristics of mucous membrane. It is cut and wrapped around a mould or stent of dental

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impression compound and sewn into the cavity to be grafted. It is most useful for enlarging stenosed eye-sockets or removing adhesions and establishing fornices in the mouth.

The *thick split skin graft* includes the epidermis with from one- to two-thirds of the derma. It splits the derma through its lower levels, leaving a small amount from which regeneration takes place and providing a tangible graft of reasonable thickness with a suitable cushion of corium carrying some accessory skin structures (b in Fig. 1). This is the most widely used free graft and has a high percentage of takes. As one becomes more accustomed to its use, the indication for the thin and small types of skin grafts disappears. The donor site regenerates quickly from the sides and bases of hair follicles and is usually completely covered in ten days and successive crops of grafts can be taken from it at not too long intervals. Brown⁴ reports as many as four crops of grafts from one donor site. The graft itself is cosmetically good, velvety, of a reasonable thickness and may grow some accessory skin structures.

This graft finds its greatest use in resurfacing the skin losses as in burns, and there seems to be a tendency in burn treatment toward their early surfacing to get away from the prolonged tannic acid eschar, to promote early granulation and skin grafting, thereby limiting the period of disability and lessening those horrible scar contractures and keloids. It is also useful in replacing scars, grafting chronic ulcer sites, and resurfacing operative areas as in radical breast amputation. One excellent use it has been put to is in resurfacing the skin of the penis after denudation from various causes. Brown⁵ reports four most interesting cases with very satisfactory results.

The judgment, skill, and excellent teamwork of Blair, Brown and Byars,^{5, 6, 7, 8} of St. Louis, has been largely responsible for the development of these thick split razor grafts. A combination of preparation of the bed, cutting and placing of the graft and secure dressing, each play about an equal part in their excellent results. The bed is carefully nursed along with saline baths and dressings alternating with dry treatment until a healthy mat of firm granulating tissue covers the area. This is shaved down to a firm yellowish bed and the grafts are cut with a Blair knife and suction technique, placed

on the donor site, and "basted" in position with running horsehair or silk sutures. Stab wounds are made to allow exit of blood or serum, and then a dressing carefully built up with layers of xeroform gauze topped by sea sponge to provide a continuous, snug, pressure dressing. Large grafts, 3 to 4 inches in width and 8 to 10 inches in length, can be cut. After watching this team of experts work and graft the whole circumference of a thigh from the skin of the abdomen at one operation and seeing a 90 to 100 per cent take one is impressed by the efficacy of the method and the indications for the other types of free graft and even the tubed pedicle rapidly narrow.

Recently, Padgett,⁹ in an effort to standardize skin-graft cutting, brought out the "dermatome", a machine for cutting calibrated grafts. This consists of a knife set at an adjustable distance from a drum. The drum and skin to be cut are coated with an adhesive which sticks the skin to the drum, the knife cutting it at the required thickness. The machine and technique are a definite advance and will find a welcome in plastic surgery. However, they are not a "cure-all", for the difficulties of graft cutting and require careful study and mastering.

The small grafts.—Reverdin, in 1869, advocated a graft in which the epidermis was pinched up with forceps and a small piece a few millimeters in diameter cut off. Many such pieces were cut off and impaled in the granulating bed to be grafted, the principle being that epithelium would grow out from these islands and soon effect a covering of the area. This has come to be known as "the pinch graft", which term is not quite correct as the pinching and cutting with scissors is too traumatizing and is no longer used. It is picked up on a needle and sliced away with a knife or razor down to almost the full depth of the corium at its centre and impaled in the granulating bed where the whole bed with its multiple little grafts is carefully dressed. Cosmetically, it is a poor graft, as both donor area and graft are unsightly, with numerous humps and hollows. It is slower in healing than the thick split grafts. The small grafts take reasonably well in infected areas and its greatest usefulness lies in starting epithelialization in small children or debilitated persons in whom large donor sites are not available. Yet,

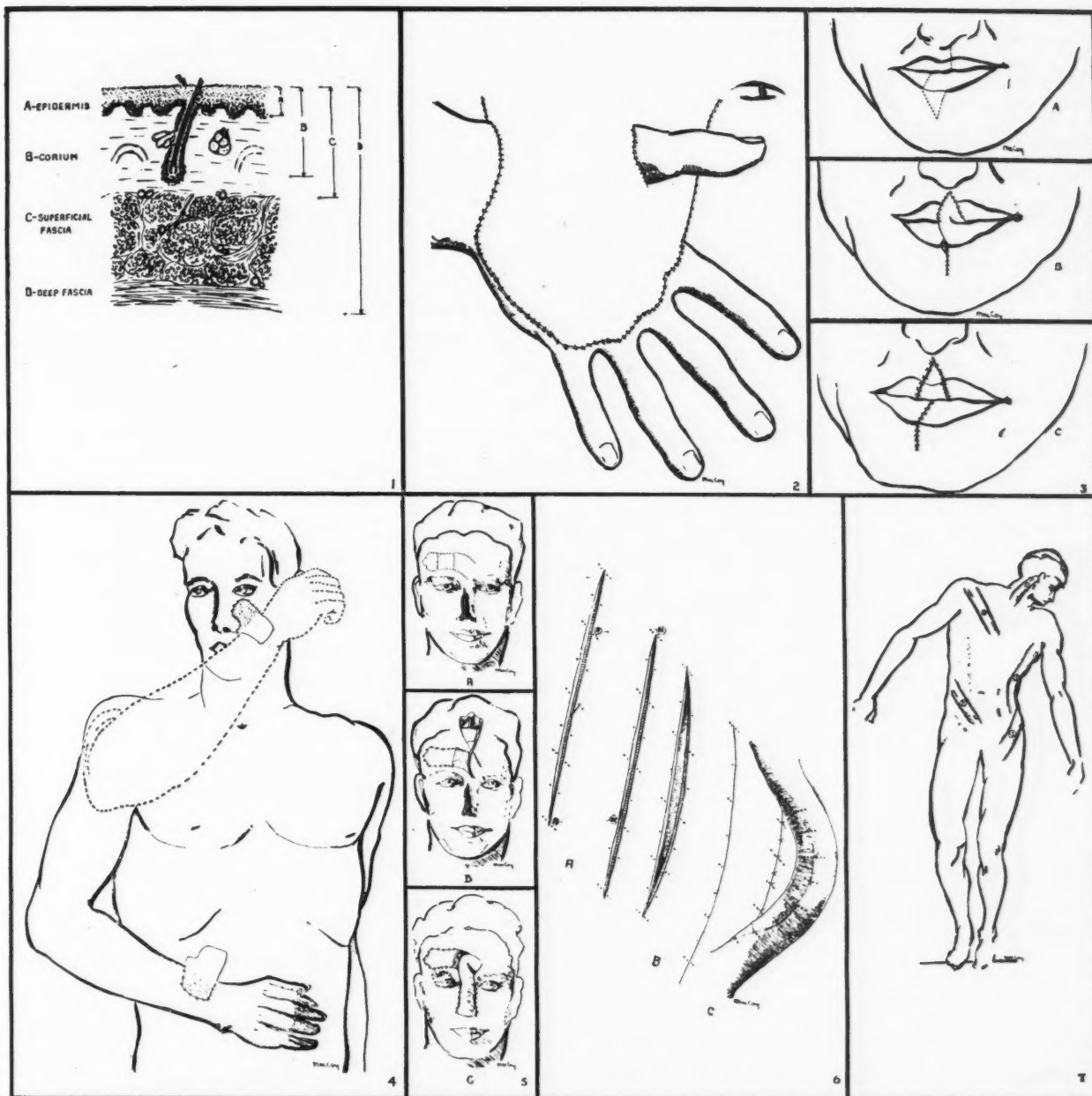


Fig. 1.—Diagram of the composition of the various grafts. (a) The thin split graft is made up of epidermis with a very small amount of derma or corium. (b) The thick split graft cuts away epidermis plus most of the corium. (c) The full thickness or Wolfe graft takes epidermis and corium *in toto*. (d) The pedicle and tubed pedicle grafts mobilize all three layers, epidermis, corium, and superficial fascia, with more or less, preferably less, of its contained fat. **Fig. 2.**—Diagram of the possibilities of a direct pedicle flap. The flap is raised from the abdomen and sewn directly into a defect on the dorsum of the hand. If the operator feels the project is too ambitious for a direct flap it is better delayed for ten days, *i.e.*, raised and sewn back into the same position on the abdomen and after a ten-days' interval raised again and sewn into the hand defect. **Fig. 3.**—The Abbé lip switch operation is an example of a simple pedicle flap. (a) It is cut on the lower lip using the inferior labial artery on the left side for nourishment, and (b) rotated about and set into a cut in the deficient upper lip. (c) At the end of ten days the pedicle is cut and the lips adjusted. **Fig. 4.**—The delayed pedicle flap has wide applications without tubing. Diagram to show how one-half may be set into the wrist, the other half delayed on the abdomen for a stage and then set into a defect on the face. **Fig. 5.**—The classical nose reconstruction operation is of the delayed pedicle type. (a) The flap is cut on the forehead to careful measurement and sewn back in position. A split skin graft may be placed underneath as between the vertical dotted lines to provide lining for the nose. (b) The flap is raised and the ends turned in to form the columella and alæ, and (c) sewn into position on the nasal defect. A split skin graft is used to fill in the distal forehead defect. **Fig. 6.**—Raising a tubed pedicle flap. (a) The incisions are to be staggered and are marked out with a series of double and single dots. Point A is to go to point A1, B to B1, and so on, double dots to double dots and single to single, both on the tube and on the donor site. (b) The incisions are made down through the superficial and sometimes the deep fascia and the flap raised, and (c) the flap is tubed. **Fig. 7.**—Some common sites of tubed pedicle flaps. See text.

as one's ability for cutting and placing large split grafts grows the indication for this small type of graft disappears.

The *full thickness graft* (Wolfe, Wolfe-Krause) is excellent in certain well-defined indications. Cosmetically, it is the most satisfactory free graft available, and provides a full, velvety, well-textured skin. However, its disadvantages lie in the fact that the percentage of takes is relatively low; it can only be cut in limited amounts and does poorly in the presence of infection. It is cut to accurate pattern or slightly larger to allow for a small amount of shrinkage. Fat and other subcutaneous tissues are cut cleanly away from the corium, and it is sutured accurately in position with numerous interrupted "plastasutes" and secured with a firm pressure dressing. In short, when it takes it is excellent.

When body contour is lost tissue in greater amounts than provided by the free skin grafts becomes necessary. Then one attempts to graft greater bulks of tissue by providing them with a modified blood supply during the course of transfer. This is done by using one of the several types of pedicle flaps, the pedicle being

the part provided to maintain the graft alive during the course of transfer.

The *simple pedicle flap* is one in which a piece of skin and subcutaneous tissue is cut free on three sides, the fourth side being left as its nourishing pedicle. The piece of tissue surrounded by the three cut sides is raised and twitched into its new position, the defect being closed by direct suture or by free grafting. A simple example is the covering of the back of a hand from an abdominal flap (Fig. 2). Another example is the Abbé lip-switch operation (Fig. 3) in which a "V" of a redundant lip is cut, all but a pedicle including the inferior labial artery. This V is then switched into an incision in the upper lip, still attached by the pedicle. At the end of 10 days to 3 weeks the pedicle is cut. The Z-relaxing incision, recently well described by Davis and Kitlowski,¹⁰ is really a double pedicle flap. Simple pedicle flaps are used in correcting defects about the eyelids and in some of the operations for the correction of hypospadias when pedicle flaps are switched in from the scrotum.

The *delayed pedicle flap* (Fig. 4) is a further modification of the former, and its use is entirely at the discretion of the surgeon. If he feels

that the bulk of tissue he is about to transfer is too great for nourishment from the available pedicle he will cut the three sides, raise it and suture it back in the same place, thus coaxing blood supply in along the line of the pedicle, *i.e.*, he cuts lateral blood supply and encourages longitudinal blood supply. After a period of waiting, 10 days to three weeks, the flap is again raised and switched to the desired position. The common method of rhinoplasty (Fig. 5) is the classical example of this type of flap. A delayed flap is carefully assessed and outlined on the forehead. Its sides are cut leaving a pedicle on the supraorbital vessels and it is then sewn back in position. A free thick or thin razor graft may be sewn on the under side of the flap to provide lining for the nose. After a waiting period



Fig. 8.—An acromipectoral tubed pedicle flap between stages of "setting in" for extensive keloid burn scar of the face, ectropion of the lower lip and a slight web scar of the neck. Fig. 9.—Burns of the axilla and chest. Early surfacing with thick split grafts is aimed at. As soon as the initial shock is passed one prepares the bed for grafting by alternate saline baths and dry treatment with remedial exercises during the bath. No dressings necessary. If they are used at night they are allowed to soak off in the morning bath. In this way the child loses its fear of dressings and the burned area may be quickly whipped into shape for grafting. Pinch grafts had been used on the above case with indifferent results, probably due to unsatisfactory preparation of the graft bed. Within six weeks of the institution of the saline bath routine the areas were completely covered.

the whole is raised again and switched down to its position on the nose. The defect is grafted with a thick split graft.

It is in the *tubed pedicle flap* that this principle has its greatest expression and provides a means of transporting great masses of tissue to entirely new and distant situations. This is the graft introduced by Gillies and Filatoff independently during the great war, and Gillies and his co-workers have remained its masters, extending its scope and usefulness.

In brief, an area of tissue is decided upon, usually rectangular in shape (Fig. 6), and its two sides are cut down through skin and superficial layer of deep fascia. The two ends are left as the pedicles and the mid-portions are sewn together in the form of a tube. This tube, designed for some distant and deformed part of the body has a double blood supply, each of which in the course of several weeks becomes capable of nourishing the whole tube. Then one or the other end may be detached and switched to a site closer to its destination or through the medium of arm or leg approximated to its ultimate site. Eventually one end is set in at one extremity of the deformity. At a later stage, the remaining pedicle is set in at the other end of the deformity and the intervening tube opened out and flattened into its new position.

Tubes may be raised from most parts of the body, but some sites lend themselves to better advantage than others. One endeavours to cut the tube parallel to superficial sources of blood supply rather than across them, and not to cross the mid-line. However, if one proceeds with caution and delays the tubing for one or two times, tubes can be eventually made in unfavourable sites and carried across the mid-line. Some of the common sites are (Fig. 7) (1) the side of the neck providing a good skin for nose restorations as popularized by Straith, (2) the acromipectoral tube, an excellent one for most face work, (3) the thoracolumbar region from which long tubes can be cut and favourable approximation of the edges of the donor site obtained. Webster,¹¹ of the Presbyterian Hospital, has recently outlined in excellent fashion the advantages of this site. (4) The inguinal tube is an old standby and lends itself readily to transfer via the wrist to the face. A scapular tube may be swung nicely to the face. The author has recently tried a lumbo-ileo-femoral tube⁵ to

restore an extensive loss of jaw bone and skin of the face and neck, including the crest of the ilium in the tube for restoration of the jaw bone.

Davis and Kitlowski¹² have brought out a very helpful advance in the designing and cutting of these tubes, whereby the edges are staggered (Fig. 6), permitting closure without the bothersome triangular raw area of the original Gillies technique. The edges are marked with alternate single and double dots in methylene blue or brilliant green, thus facilitating the closure, point to point.

The donor site is sometimes bothersome. In small tubes this is not so, as the edges can be brought together with a moderate amount of undermining. In the larger tubes extensive undermining and even relaxing incisions may be necessary, and then closure may not be possible, it being necessary to resort to free skin grafts. Webster¹¹ describes a nice technique for effecting closure by placing numerous interrupted black silk sutures through the superficial layers of deep fascia to draw the edges of the donor site together. If this and relaxing incisions fail free skin grafting will probably be necessary.

CONCLUSIONS

There are many different types or variations of skin graft, each with its indication.

The thick split graft is the most useful free graft.

Improvements in instruments and technique have been brought out.

The delayed pedicle graft has a wide application.

Advances have been made in the design of tubed pedicle grafts.

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CONGENITAL ANOMALIES OF THE URINARY TRACT IN CHILDREN AND INFANTS AND THEIR RELATION TO CHRONIC PYURIA*

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A FEW cases of pyuria in children respond readily to proper treatment and recovery is complete and permanent. On the other hand there occasionally occur cases in which the pyuria persists in spite of treatment or disappears only to return after varying periods of time. It is this chronic type of pyuria with which we are immediately concerned.

In his book on "Common Infections of the Kidneys", Kidd¹ makes this striking introductory remark that "bacteria are not *the* cause of bacterial infections". This statement on first consideration may seem to be somewhat of a paradox, and while we are not prepared by any means to accept in its entirety the line of argument put forward by this author, yet in so far as the question of chronic pyuria in children is concerned there is much more truth in the statement than is at first apparent. The constant association of bacteria with pus cells in cases of pyuria has been at least presumptive evidence that the disease, if so it may be called, is of bacterial origin. Having isolated a certain organism from a given case, the laboratory worker was apt to sit back with a feeling of satisfaction in having once more found the source of the trouble and established the cause of the disease. With the development, however, of more skilful surgery, coupled with more adequate methods of examination and the accumulation of evidence gleaned from the post-mortem room, the importance of bacteria as the causative factor in bacterial infections of the urinary tract is growing less and less. Particularly is this true in chronic pyuria in children. Here, it is true, bacteria may be swarming in the urine, and in response to this bacterial invasion large numbers of pus cells find their way into the urinary tract. Frequently this state of affairs, however, far from being the cause of the trouble, is in reality the effect, as we shall presently show. Not that there is any common cause, for causes are multiple, but their detailed consideration is beyond the scope of this

paper. A rather complete list of such causative factors as may occur in both children and adults was tabulated by Hinman² in 1929, to which table the reader is referred.

But, though the causes be many, in the majority of instances they have one thing in common, and that is that they tend to produce obstruction somewhere in the urinary tract. This obstruction may result in back pressure or stasis, which, in time, favours infection and may result in certain functional disturbances. The nature of these obstructive lesions may vary from all forms of congenital malformations on the one hand to certain acquired conditions on the other hand. In adults such common acquired conditions as stricture, stone, tumour or simple enlargement of the prostate constitute a large proportion of the causes of obstruction. In children, on the other hand, causes of a congenital nature are more frequent, while those belonging to the acquired group, with the exception perhaps of renal tuberculosis, are comparatively rare. The frequency with which such anomalies are encountered in the urinary tract was pointed out by Bugbee and Wollstein³ in 1924 in a report on the surgical pathology of the urinary tract in infants. In 4,903 autopsies, 117 anomalies of the urinary tract were discovered, which was 2.4 per cent of all autopsies. Males predominated, there being 82 males and 35 females. Bigler,⁴ in 1934, associated the presence of a preceding pyuria with anomalies found at post-mortem. He found that stasis did not always lead to pyuria, as only 50 per cent of the children with urinary stasis had pyuria. However, when infection did take place it was exceedingly persistent, even becoming permanent, unless the obstruction was relieved.

The purpose of this communication is the consideration of these congenital anomalies of the urinary tract (their frequency, type, and location) and their relation to chronic pyuria. A clearer conception of this whole problem can be gained, we believe, in approaching any given case by attempting to answer the following questions: (1) What is the *congenital lesion*? (2) What are the consequent *anatomical changes*?

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(3) What is the nature and what the extent of the resulting *inflammation*? (4) What are the *disturbances of function*? Clinically, perhaps, these questions should be considered in their reverse order. If the patient is an older boy he may present himself complaining of certain *disturbances of function*, such as frequency of urination, urgency, enuresis, burning, incontinence, or dribbling, with perhaps general ill-health and failure to gain in weight. Search for a cause for this derangement of function may reveal pus and bacteria in the urine, an indication of an *inflammatory reaction* somewhere in the urinary tract. Investigation by means of the flat x-ray, intravenous urography, ureteral catheterization, and cystoscopy should reveal the nature and extent of the *anatomical changes* that have taken place (such as trabeculation of the bladder wall, hydroureter, and hydronephrosis). Similarly, this investigation should reveal further the location of the obstructing *congenital lesion* (such as valves in the posterior urethra), although the true character of the latter may not be discovered until operation or post-mortem examination. Further clinical investigation may also reveal impairment of renal function from prolonged back pressure, resulting in atrophy of renal elements.

On the other hand, should the patient be an infant the only obvious *functional disturbance* may be a persistent unexplained fever. Examination of the urine may again reveal pus and bacteria, evidence of some *inflammatory reaction* in the urinary tract. While all the various methods of investigation enumerated above for an older child may not be applicable to infants, intravenous pyelography and cystography are possible and assist greatly in revealing the nature and extent of the *anatomical changes* and the location of the *congenital lesions* when such are present. While the above order may be the proper method of approach in the clinical investigation of a case, a clearer understanding of the pathology, we believe, can be had by considering these questions in the order first mentioned.

Congenital anomalies.—These anomalies may occur almost anywhere from the urinary meatus to the renal pelvis, but the more common sites are in the region of the posterior urethra in boys, at the uretero-vesical orifice and the uretero-pelvic junction. Some of the anomalies of the urinary tract are of such a nature that they do not tend to give rise to

either obstruction, pyuria, or disturbance of function, while others again, because of their nature or position, almost invariably result in one or all of these abnormal conditions. As examples of congenital anomalies which are less likely to result in obstruction we may mention the horse-shoe kidney and the kidney with double ureters, both of which lesions have been discovered by accident on the post-mortem table, having produced during life no recognizable symptoms. Occasionally it may happen, however, in the case of double ureters that one or other of the ureteral orifices may be stenosed, thus giving rise to ureteral dilatation, stagnation of urine, infection, and pyuria. Likewise with the horse-shoe kidney, the ureters passing down anterior to the united lower poles are more liable to compression than are ureters in their normal positions, and are therefore more apt to give rise to hydronephrosis with subsequent pyuria. Other types of congenital lesions which almost invariably give rise to subsequent trouble are posterior urethral valves (as already pointed out), stenosis at the uretero-vesical or uretero-pelvic junctions, or aberrant renal arteries. These latter may cause obstruction by crossing in front of the ureter just as it leaves the pelvis.

The material forming the basis of this study is gleaned from the records of 1,148 consecutive autopsies covering a period of 5 years and 3 months. During this time 51 cases of congenital anomaly of the urinary tract were encountered, an incidence of 4.4 per cent. In addition, hydroureter and hydronephrosis were encountered in 7 other cases in which no congenital anomaly was found, making a total of 58 cases, or an incidence of 5.05 per cent. Of these 58 cases, 39, or 67.3 per cent, occurred in infants under one year of age, and of these 39 cases all but 6 were under 6 months of age. This is in keeping with the developmental character of these lesions which in the great majority of instances were doubtless present in some degree at the time of birth. Males predominated in the proportion of 39 males (67.2 per cent) to 19 females (32.8 per cent), or approximately 2 to 1. While these figures are similar to those of Bugbee and Wollstein³ the reverse might be expected from the greater frequency with which acute clinical pyuria is encountered in girls. Association with anomalies elsewhere in the body was a common occurrence as shown in Table I.

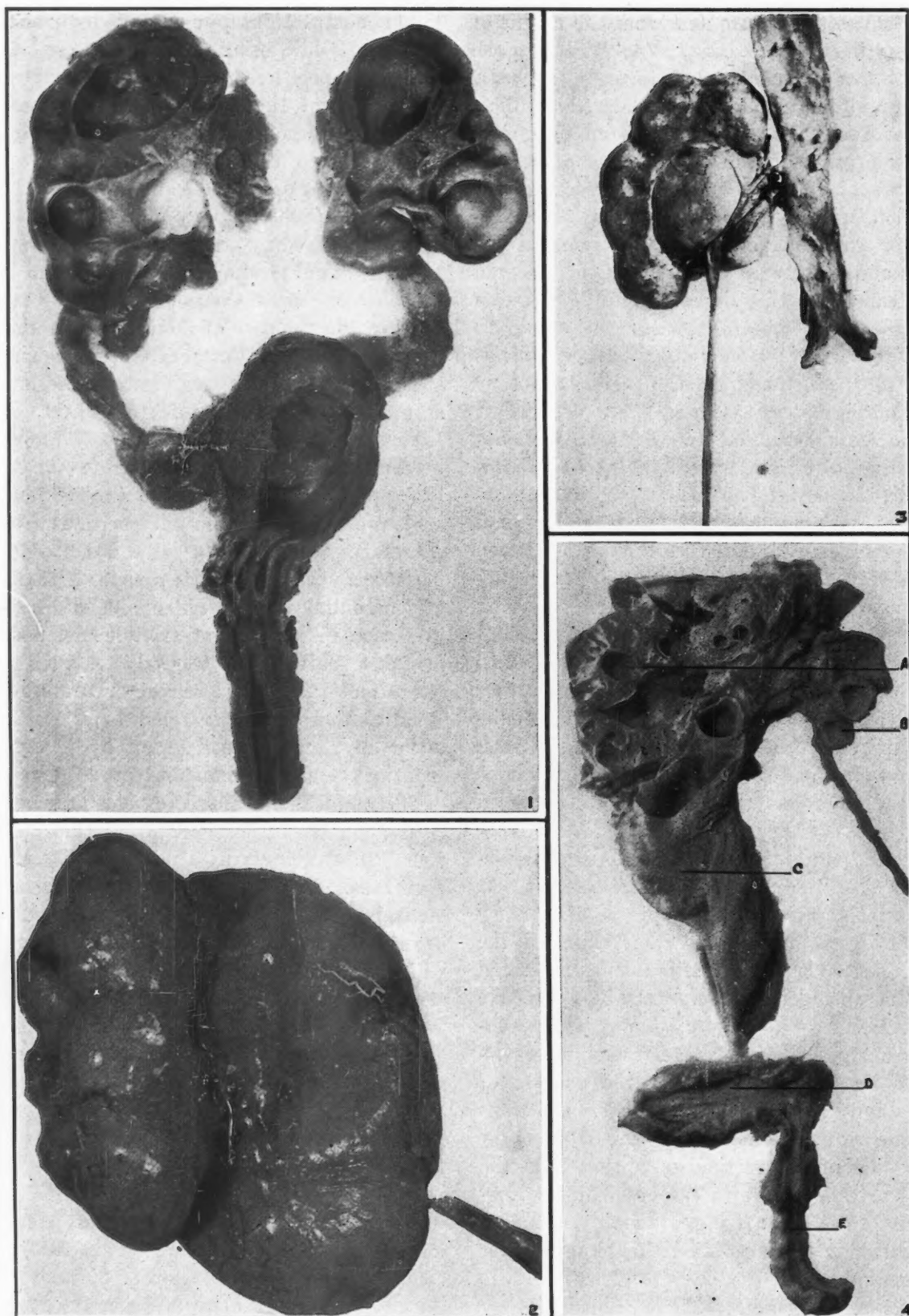


Fig. 1.—Bilateral infected hydronephrosis and hydroureter with ureteral angularity and hypertrophy of bladder, secondary to posterior urethral valves. R.B., aged 2½ years. Fig. 2.—Huge non-infected left hydronephrosis secondary to uretero-pelvic stenosis. R.C., male, aged 5 years. Fig. 3.—Moderate non-infected left hydronephrosis secondary to aberrant renal artery. Note the manner in which the ureter is pinched as it loops over the artery supplying the lower pole. Posterior view. R.Mc., aged 13 years, death from tumour of cerebellum. Fig. 4.—Huge right hydroureter and hydronephrosis secondary to uretero-vesical stenosis. Note also marked hypoplasia of left kidney. There was extensive right pyelonephritis with a perinephric abscess which ruptured into the peritoneal cavity. A, right kidney; B, left kidney; C, right ureter; D, bladder; E, urethra. E.B., male, aged 11 weeks.

Anomalies of the urinary tract.—The various types are seen in Table II. In some of these the anomalies were multiple, as, for example, double ureter with stenosis of the uretero-vesical junction of one or both ureters. From this Table it is also seen that many of these lesions are obstructive in nature. Thus, from below upward there are the following: obstructing phimosis 2, anomaly of corpus spongiosum 1, posterior urethral valves 6, cyst of

prostate 1, stenosis of uretero-vesical orifice 9, valves in ureters 2, stenosis of uretero-pelvic junction 3, and aberrant arteries compressing the ureter 3. In addition, there were 4 cases with dilatation of the bladder, bilateral hydro-ureter, and hydronephrosis, in which no obstructing lesion was found and in which the cause was believed to be a neuromuscular dysfunction. In 3 other cases of hydroureter or hydronephrosis no satisfactory explanation could be found. It is just possible that these also may be due to a mild form of neuro-muscular dysfunction or to faulty development of the musculature of ureter and pelvis.

Anatomical changes.—The anatomical changes resulting from these various obstructive lesions varied greatly, depending upon the location of the lesion, its severity, and duration (the latter corresponding presumably to the duration of life, as the lesions are believed to have been present from birth). Thus, changes in the bladder were present in 11 cases. These included dilatation, with or without hypertrophy and trabeculation of bladder wall. Hydroureter, bilateral or unilateral, with or without angularity, was present in 29 cases. Also hydronephrosis and hydronephrotic atrophy of all degrees from mild to extreme, either bilateral or unilateral, was found in 35 cases. For example, a 2 year old male infant, R.B., showed at autopsy dilatation of bladder with hypertrophy of bladder wall, bilateral hydroureters with ureteral angularity and bilateral hydronephrosis with hydronephrotic atrophy, all secondary to congenital valves in the posterior urethra (Fig. 1). On the other hand the 3 cases of stenosis at the uretero-pelvic junction showed only unilateral hydronephrosis with hydronephrotic atrophy, an example of which is shown in Fig. 2. All stages of anatomical change between these two extremes were encountered. An illustration of moderate hydronephrosis secondary to compression of the ureter by an aberrant renal artery is shown in Fig. 3. This was the case of a 13 year old boy, R.Mc., who died of a cerebellar tumour. The renal lesion was an accidental finding at autopsy. On another occasion we encountered a mild, non-infected hydronephrosis secondary to congenital valves in the ureter. This was from an 8 months old male infant, D.F., who died of bronchopneumonia. In this case also the renal condition was not suspected until it was discovered at autopsy.

TABLE I.

DEVELOPMENTAL ANOMALIES ASSOCIATED WITH ANOMALIES OF THE URINARY TRACT

Undescended testicle (bilateral 3, unilateral 1) ..	4
Accessory spleen	5
Spina bifida	4
Internal hydrocephalus	2
Stenosis of aqueduct of Sylvius	1
Defect of skull	1
Defect of falx cerebri	1
Club feet	1
Hypertrophic pyloric stenosis	1
Aberrant pancreas in stomach wall	1
Malformation of liver	1
Absence of gall-bladder	1
Stenosis of common bile duct	1
Atresia of oesophagus	1
Meckel's diverticulum	1
Umbilical hernia	2
Recto-urethral fistula	1
Malformation of diaphragm	1
Congenital heart	3
	33

TABLE II.

TYPES OF CONGENITAL ANOMALIES OF THE URINARY TRACT

1. <i>Kidney</i>	
Horseshoe kidney	8
Solitary lump kidney	1
Malposition	1
Rudimentary	1
Large single cyst	1
	— 12
2. <i>Uretero-pelvic junction</i>	
Stenosis	3
Pressure from aberrant artery	3
	— 6
3. <i>Ureters</i>	
Reduplication, unilateral	6
Reduplication, bilateral	2
Ureteral valves	2
	— 10
4. <i>Uretero-vesical junction</i>	
Unilateral stenosis	5
Bilateral stenosis	4
	— 9
5. <i>Bladder neck</i>	
Cyst of prostate	1
	1
6. <i>Urethra</i>	
Posterior urethral valves	6
Hypospadias	1
Anomaly of corpus spongiosum	1
	— 8
7. <i>Prepuce, phimosis</i>	2
8. <i>Ectopia vesicæ</i>	3
	— 51
9. <i>Neuromuscular dysfunction</i>	4
10. <i>Unknown causes of dilatation</i>	3
	58

Inflammatory changes, as recognized by clinical pyuria or by finding pus in the urine at autopsy, were encountered in 25 of the 58 cases, or 43 per cent. Of the 33 cases in which there was no pyuria 20 showed obstructive lesions. Thus, while infection of the urinary tract is a common sequel to obstruction of congenital origin, it is by no means constant. However, it

should be borne in mind that over 57 per cent of these patients died before reaching 6 months of age, so that the period of time during which they suffered stasis of the urinary tract (and hence increased susceptibility to infection) was relatively short. Infection does not appear to depend upon the level at which the obstruction occurs. Thus, of 6 cases in which obstruction

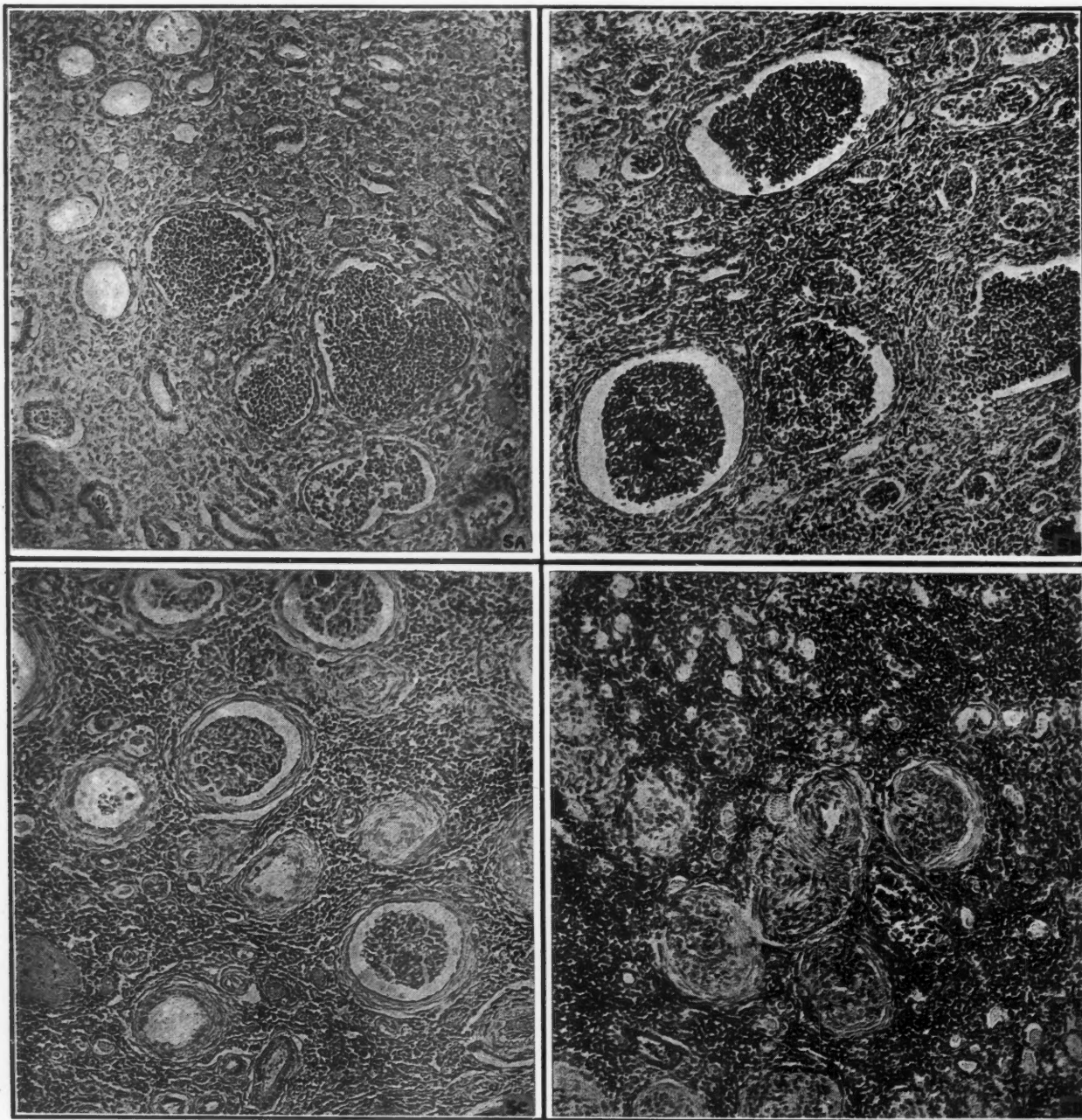


Fig. 5A.—Photomicrograph of kidney from 9 months' old girl with bilateral double hydroureters and hydronephrosis secondary to stenosis at uretero-vesical orifice. While many tubules are dilated and filled with pus there is no evidence of scarring. **Fig. 5B.**—Photomicrograph of kidney from 2 year old boy, M.K., with posterior urethral valves. There was marked bilateral hydroureter and hydronephrosis. Note the dilated pus-filled tubules. Many other smaller tubules also contain pus cells. The cellular infiltration is chiefly polymorphonuclear. There is only slight connective-tissue proliferation. **Fig. 5C.**—Photomicrograph of kidney from 7 year old boy, G.B., with bilateral hydroureter and hydronephrosis secondary to stenosis of urethral meatus with hypospadias. Note the atrophied tubules, scarred glomeruli, thickening of arterial walls, and lymphocytic infiltration. **Fig. 5D.**—Photomicrograph of kidney from 10 year old boy, D.H., with posterior urethral valves, bilateral hydroureter, and hydronephrosis. Note the atrophied tubules, thick walled arteries, advanced scarring of glomeruli, and diffuse lymphocytic infiltration.

was at the outlet of the pelvis, 3 were infected and 3 were sterile.

Microscopically, the non-infected cases with moderate to severe hydronephrosis showed varying degrees of compression atrophy of tubular epithelium, scarring of glomeruli and relative increase in interstitial connective tissue with mild lymphocytic infiltration. On the other hand, those kidneys from the infected cases showed pus in the tubules and interstitial polymorphic infiltration, varying in degree from a few pus cells in some of the tubules to multiple acute interstitial abscesses. These changes were found both in kidneys with very little or with marked hydronephrotic change (Fig. 5). In one instance (E.B., male, aged 11 weeks), in which the obstructing congenital anomaly was a stenosis of the right uretero-vesical orifice (associated with a rudimentary left kidney and ureter) and the anatomical change marked right hydroureter, hydronephrosis and hydronephrotic atrophy, the inflammatory lesions consisted of extensive interstitial nephritis with multiple renal abscesses (Fig. 4). One of these latter perforated the renal capsule giving rise to a perinephric abscess which in turn ruptured into the peritoneal cavity, causing a fatal peritonitis. The infecting organism was *B. coli*.

Functional disturbances.—To complete the picture, this same case serves to illustrate the functional disturbances which may manifest themselves clinically as a result either of the congenital anomaly itself or the anatomical or inflammatory changes to which it may give rise. Thus, this infant gave a history of vomiting, fever, diarrhoea, loss of weight, and drowsiness for 2 weeks, and of a "hard abdomen" and almost complete anuria for 1 week prior to admission. The anuria doubtless resulted from the stenosis of the right uretero-vesical orifice (the left kidney being only a rudimentary one), plus the added factor of pus in the urine which tended to still further obstruct the already too narrow outlet. The vomiting, fever, diarrhoea, loss of weight and drowsiness, on the other hand, can be attributed to the infection. While this infant was only 11 weeks old at the time of death, and while the pyuria can hardly be said to be chronic, at the same time the case serves to illustrate the various stages in the development of the disease, namely, congenital, anatomical, inflammatory, and functional, the

functional disturbances here being largely due to an acute inflammation.

On the other hand, in some of the more chronic cases the disturbances of function of inflammatory origin become over-shadowed by symptoms of renal insufficiency resulting from atrophy of renal tissue, directly the result of obstruction. Thus, in the older children growth may be retarded, the blood pressure elevated, and headache a common complaint. There is an increase in non-protein nitrogen and creatinine values in the blood, with a low fixed specific gravity of the urine in which albumin may be present in varying amounts together with a few or many pus cells. In other cases symptoms directly associated with the urinary tract such as frequency, urgency, enuresis, burning or incontinence, may dominate the picture.

COMMENT

There is a great variety of congenital anomalies of the urinary tract giving rise to a still greater variety of anatomical, inflammatory and functional changes. Some of these anomalies produce few or no symptoms, and are encountered only accidentally at autopsy, while others are responsible for a chronic pyuria which in the absence of proper treatment tends to become progressively worse. The clinical investigation of such cases as these along the lines suggested above should tend to develop a clearer conception of the underlying pathology and a more intelligent application of therapeutic measures.

SUMMARY

1. In a series of 1,148 consecutive autopsies 51, or 4.4 per cent, presented some form of congenital anomaly of the urinary tract. Seven other cases, making a total of 58, or 5.05 per cent, had dilatation of some part of the urinary tract with stasis in which no congenital lesion was found. Males predominated in the proportion of about 2 males to 1 female. Over 67 per cent occurred in children under 1 year of age.
2. Anatomical changes, such as hypertrophy and trabeculation of bladder wall, hydroureter with ureteral angularity, hydronephrosis, and hydronephrotic atrophy were present in 33 cases. These changes were interpreted as being secondary to obstruction from the congenital anomaly in 26 cases, to neuromuscular dysfunction in 4 cases, while in 3 cases no adequate

cause was found. The most common obstructive anomalies were valves in the posterior urethra or ureters, stenosis at the ureteropelvic or uretero-vesical orifices, or pressure from an aberrant artery.

3. Inflammatory changes, as recognized by clinical pyuria or by the finding of pus in the urine at autopsy, were present in 25, or 43 per cent, of the cases. Thus, while it would appear that urinary stasis favours infection of the urinary tract, it should be pointed out that 20 of the cases showing obstruction were free from infection. Therefore, the mere fact that examination of the urine is negative, is no proof that the urinary tract is normal.

4. Functional disturbances, as recognized by the complaint of the patient or as revealed by clinical investigation, may be due primarily to the anomaly itself or secondarily to the anatomical changes resulting from obstruction or to a superadded infection.

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GRANULOSA AND THECA CELL TUMOURS OF THE OVARY*

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DURING recent years there has been a marked revival of interest in the clinical and pathological features of solid ovarian tumours. This has been particularly true for those tumours made up of the cellular elements of the Graafian follicle, the granulosa and theca cells. The granulosa cell tumour was first described by von Kahliden¹ in 1895. In 1915 Robert Meyer² published a monograph on the subject but clinical interest was not aroused until it was demonstrated that they secreted oestrin. In 1936 it was accidentally discovered that tumours of the granulosa group could be experimentally produced by irradiation of the ovaries of mice.³ As a result a considerable volume of literature has rapidly accumulated in regard to these tumours in excess of their clinical importance. They do present, however, many characteristics that are of considerable interest to both clinician and pathologist.

Granulosa cell tumours are not common, nevertheless they cannot be classified as rare. Over 250 such growths have been reported, but this certainly does not give a true picture of their frequency, as it is only in recent years that general pathologists have become familiar with their microscopic appearance. In 80 malignant primary ovarian neoplasms Sailer⁴ encountered 14 granulosa cell tumours, an incidence of 17.5

per cent, while Schröder, according to Traut,⁵ estimated that 2 to 3 per cent of solid ovarian tumours belong to this group. Our incidence, based on 612 ovarian neoplasms of all types, is 2.6 per cent.*

It is difficult to estimate the malignancy of the granulosa cell tumour. Long follow-up records are not common, and recurrences have been reported many years after the removal of the primary tumour. In a series of 54 cases reported by Traut and Marchette⁶ 15 per cent were clinically and histologically malignant. We have not as yet had a clinically malignant one although seven of our cases have been followed for five years or longer. The tumour may be malignant regardless of the age of the patient. Anderson and Sheldon,⁷ in 1937, reported a malignant tumour in a child of three and a half years of age. The rate of growth varies markedly. One of our patients was observed for a period of three and a half years before operation. During this time only slight if any increase in size of the tumour was evident, while in another case the only complaint was a rapidly enlarging abdomen.

Granulosa cell tumours vary markedly in size. Very small ones a few mm. in diameter have been described as well as huge ones, the largest weighing 34 pounds.⁸ They rarely invade through the capsule of the ovary. They as a

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* These cases will be reported in detail in a later publication.

rule are of relatively soft brain-like consistency and vary in colour from pale grey to a distinct yellow, the characteristic colour of the normal corpus luteum. The larger tumours usually show areas of interstitial hæmorrhage, cystic degeneration, and necrosis. Meyer in his original monograph described three microscopic types, the follicular or mature type, the cylindroid, and the sarcomatoid. In most tumours more types than one are evident, and in some all variations of pattern of growth may be seen. The wide variations in both gross and microscopic appearance are well demonstrated by the accompanying photographs of our specimens.

The secretion of œstrin is one characteristic of these tumours which is of particular clinical interest. It results in changes in the endometrium, myometrium, and, in some cases, changes in the breasts and external genitalia. The endometrium, as a result of the prolonged stimulation by œstrin, enters on an unrestricted phase of proliferation ending in hyperplasia of the Schröder or cystic type. Clinically, this results during the years of sexual maturity in periods of amenorrhœa alternating with irregular, prolonged or profuse bleeding. If the tumour occurs before puberty, precocious menstruation results as well as the development of secondary sex characteristics. When it occurs after an established menopause, uterine bleeding recurs, the uterus hypertrophies, and a clinical picture simulating carcinoma of the endometrium is produced. While most tumours secrete sufficient œstrin to cause this chain of symptoms, some do not. In our experience the size of the tumour bears no relationship to its physiological activity.

The granulosa cell tumour is not the only ovarian neoplasm characterized by the secretion of œstrin. In 1932 Loeffler and Priesel⁹ described a solid ovarian tumour having the gross appearance of a fibroma and made up of cells microscopically resembling the cells of the theca interna. Just as in the normal Graafian follicle luteinization of the theca occurs, so in these tumours islands of theca cells showing varying degrees of luteinization are evident. The presence of fat in the luteinized cells as well as in the cells not showing this change gives to these tumours their diffuse or streaked yellow colour. The granulosa and theca cell tumours are very closely related and probably have a common origin in the ovarian mesenchyme. Some believe that these two types are one and that the theca

cell variety is not an entity. Traut,⁶ in a study of 54 examples of the theca and granulosa cell group, showed that most of them were composed of a mixture of both types of cell. Realizing the close relationship between the two, it would seem wise for the present at least to separate them, largely because of the rather distinct gross and microscopic appearance of the theca cell variety.

As previously mentioned, the prolonged effect of the œstrin secreted by granulosa and theca cell tumours results in endometrial hyperplasia and uterine bleeding. The possible relationship between endometrial hyperplasia and carcinoma

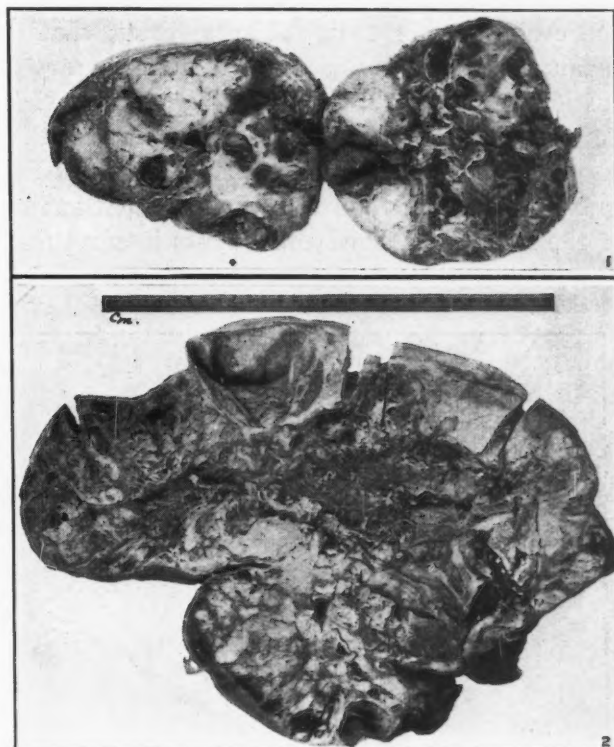


Fig. 1.—Typical granulosa cell tumour, 8 cm. in diameter, showing areas of cystic degeneration and interstitial hæmorrhage. Fig. 2.—An unusually large granulosa cell tumour showing extensive cystic degeneration and necrosis.

of the endometrium is being more and more frequently commented upon in gynæcological literature. There is now considerable evidence that the relationship between these two conditions is more than a casual one. In this regard it is interesting to note that three cases of carcinoma of the uterus and granulosa cell tumour of the ovary have been recently reported from the Mayo Clinic.¹⁰ We too have seen this association on more than one occasion with both the theca and granulosa cell variety.

Despite the relatively infrequent occurrence of this group of ovarian neoplasms, they do at

certain age periods produce a chain of signs and symptoms that should in many cases lead to a correct pre-operative diagnosis. The occurrence of uterine bleeding and the development of secondary sex characteristics in a girl before puberty, particularly if other evidence of glandular dyscrasia is absent, are strongly suggestive of granulosa cell tumour. Such a case was reported by Hare,¹¹ in which rectal examination revealed an ovarian enlargement and a diagnosis of granulosa cell tumour was made and confirmed by operation.

During the period of sexual maturity endometrial hyperplasia and uterine bleeding are so commonly encountered without any change in the ovaries, other than follicular cysts, that a diagnosis of a granulosa cell tumour is rarely justified. When vaginal bleeding occurs after an established menopause, carcinoma of the cervix or the uterus is much more likely to be a cause of bleeding than a granulosa cell tumour of the ovary. If, however, diagnostic curettage reveals endometrial hyperplasia, and at the same

time the uterus fails to show the usual post-menstrual atrophy, then a granulosa cell tumour may be present. If an ovarian tumour is palpated as well, the diagnosis is warranted. All patients, however, suffering from post-menopausal bleeding and an ovarian tumour will not have a growth of the granulosa cell type. Papillary and adeno-carcinoma of the ovary occasionally are associated with uterine bleeding and may in some instances metastasize to the endometrium. Frequently granulosa tumours are quite small and cause no appreciable enlargement to the ovary, and yet may be responsible for hyperplasia of the endometrium and bleeding. This naturally brings up the question of the clinical management of cases of post-menopausal uterine hypertrophy and endometrial hyperplasia in the absence of a palpable ovarian tumour. Treatment by either high voltage x-ray or intra-uterine radium should not be employed in such cases. A period of observation after the curettage is indicated, then if the hyperplasia and bleeding recur, even if re-examination

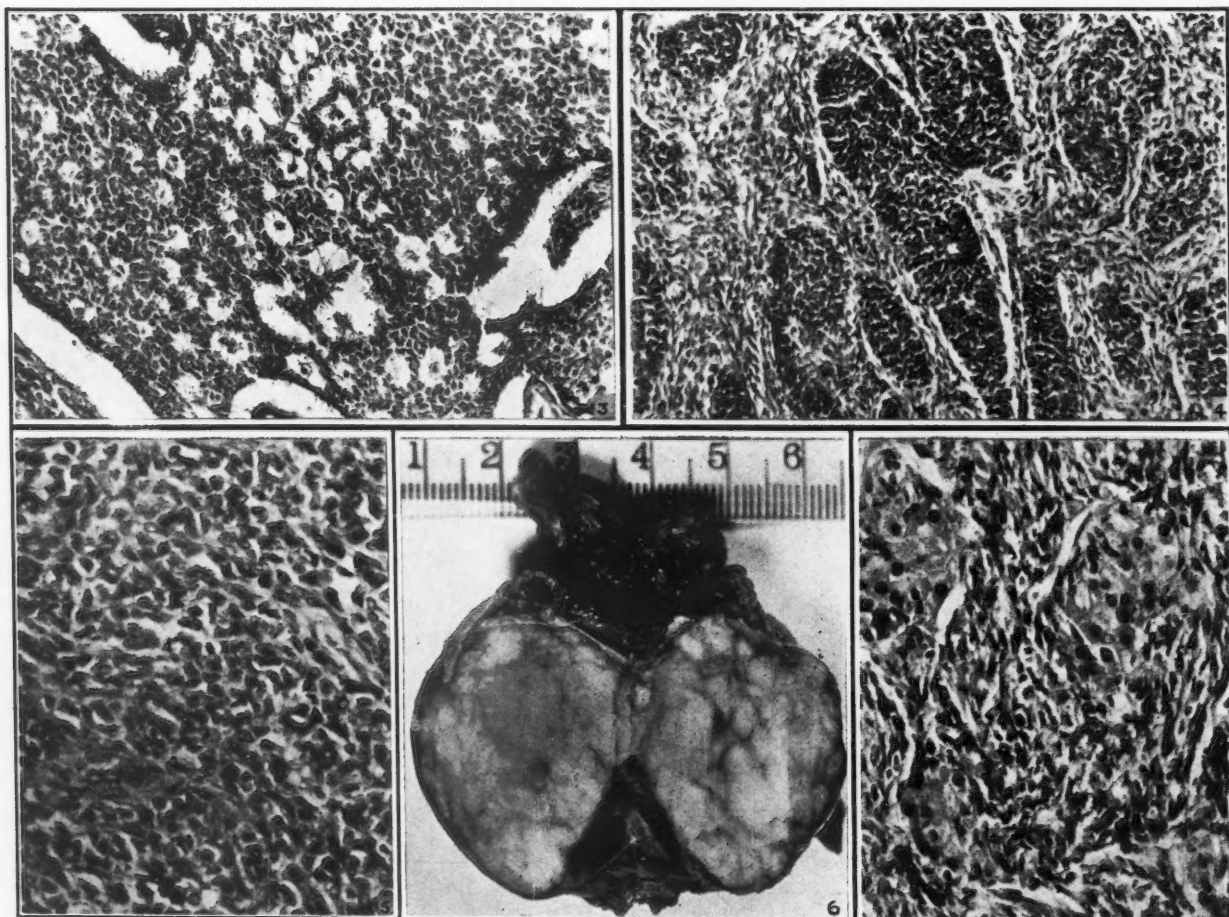


Fig. 3.—Typical microscopic picture of the mature or follicular type of granulosa cell tumour. Fig. 4.—Cylindroid type of granulosa cell tumour. Fig. 5.—Sarcomatoid type of granulosa cell tumour. Fig. 6.—Theca cell tumour having the gross appearance of a fibroma; it was however distinctly yellow in colour. Fig. 7.—Photomicrograph of theca cell tumour showing islands of luteinized theca cells.

fails to reveal an ovarian tumour, hysterectomy and bilateral oöphorectomy are justified. It should be emphasized that this radical treatment does not apply to all cases of post-menopausal uterine bleeding when carcinoma of the uterus does not exist, but only to those cases where endometrial hyperplasia and myometrial hypertrophy are present.

The general surgical management of these tumours varies with the age of the patient and the presence or absence of gross evidence of malignancy. When they occur before puberty or during the early years of sexual maturity simple removal of the tumour will usually result in a return of the normal status of the patient. In pre-pubertal years the bleeding stops and breast development temporarily ceases or regresses. During the years of sexual maturity a return to normal menstruation can be expected and even pregnancy may occur. During the menopausal and post-menopausal years hysterectomy and bilateral oöphorectomy should be performed.

If there is gross or microscopic evidence of malignancy, post-operative high voltage x-ray therapy should be used. If, on the other hand, the tumour is small, shows no gross evidence of malignancy, and is of the mature or follicular type, post-operative radiation is probably not necessary. It has been, however, our practice to employ such post-operative radio-therapy in most cases when the tumour occurs at or after the menopause, regardless of clinical or pathological evidence of malignancy.

The experimental production of granulosa and theca cell tumours in mice by irradiation of the

ovaries is worthy of consideration by the gynaecologist who so frequently treats bleeding at the menopause by radio-therapy. Whether changes can be produced in the human ovary by radium or x-ray that are in any way comparable to changes in the ovaries of mice at present remains undetermined. When one considers how often radio-therapy is employed in both benign and malignant lesions of the genital tract, one would seem justified in thinking that such tumours would have been reported after radiation if such an occurrence is likely. The experimental evidence, however, is sufficiently striking to warrant caution in the use of this physical agent and restriction of its employment to those cases presenting very definite indications for its use.

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EYELID DISORDER IN TRICHINOSIS.—Trichinosis should be suspected whenever the membrane lining the eyelids presents a waxy-yellow, swollen appearance without known cause, Louis Lehrfeld and Carl F. Breisacher state in the *Journal of the American Medical Association* for November 23, 1940. In their report of a case in which this condition, known as bulbar chemosis, was found due to trichinosis (infestation with worms present in undercooked pork) the authors say that this is a frequent and prominent symptom of trichinosis, and many cases are

probably missed by the eye-specialist because the complication has not been kept in mind. They suggest that white blood cell counts be made in all patients who present this characteristic swelling without apparent cause. Infestation with the trichinosis parasites raises this count. Mild cases of trichinosis may not be accompanied by illness and thus the presence of the eye symptom may lead to correct diagnosis. In most of the cases reported, pain on movement of the eyes was present, but in the authors' case such pain did not occur.

HYDRONEPHROSIS OF PREGNANCY*

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THE most common urological complication of pregnancy is hydronephrosis. Although pyelitis occurs in pregnancy in from 10 to 60 per cent of cases, it is essentially an infection engrafted on hydronephrosis. Dilatation of the ureters and pelvis is a normal concomitant of the puerperium. The etiology of this condition is still in the controversial stage, but recent experimental research together with further clinical observations seem to point to a double causation. I am presenting this paper with a view to clarifying our concepts of this subject in the light of recent knowledge. I also wish to report a case of hydronephrosis with gross hæmaturia.

Our attention was first directed to this subject in 1843, by Cruveilhier¹ who, in the course of post-mortem examinations of women dying during the later months of pregnancy, found dilated ureters. Engelman in 1869 was the first to describe the normal peristaltic contractions in the ureters.

Etiology.—There are two main schools of thought as to the explanation of this phenomenon. The early group of investigators emphasized the mechanical or obstructive factor. Their contention was that the pressure of the pregnant uterus on the ureters at the level of the pelvic brim, together with the close proximity of the base of the bladder to the vagina and uterus, satisfactorily accounted for ureteral and pelvic dilatation. The relatively commoner occurrence of right-sided dilatation of the ureter was explained on the basis of dextro-rotation of the uterus, the anatomical presence of the large iliac veins on the right side, in addition to the distended sigmoid on the left side which protects the left ureter. In its larger significance, man is paying dearly for the privilege of having assumed an upright posture in the course of evolution. Even today there are urologists like Woodruff and Milbert² who regard the term "hydronephrosis of pregnancy" as a misnomer. They claim that in every hydronephrosis a pre-existent lesion (*e.g.* nephroptosis with redundant

ureter) was present; this was present in our case. The gravid uterus, they maintain, aggravates this condition.

We come now to the other and more recent group of research workers, the endocrinologists. On the assumption that the pregnant woman is in a new hormonal state, the hormones being stored in the placenta, fetus and certain organs, these workers were able to extract them from the early pregnancy urine in almost every case. It was observed that all the smooth muscle structures express their response to these endocrine stimuli by relaxation. This, then, must also be true of the calyces, pelvis, and ureters. Whatever the nature of this endocrine substance, it is generally agreed that from the third to the eighth month of pregnancy there is progressively diminishing ureteral peristalsis. From that time to about the second month following delivery, recovery to normal tone proceeds. Rossi,³ by injecting the alcoholic extracts of the blood of pregnant rabbits into non-pregnant rabbits, demonstrated renal and ureteral changes, bearing out his claim that the underlying fundamental factor is biological. Here, in short, are two theories and the facts which substantiate them. The controversy is still on, some leaning in one direction and others in the opposite. Perhaps the most important recent contribution to the ultimate etiology of this problem has been given by Wagenan and Jenkins.⁴ They started off with the assumption of double etiology, but to determine their relative importance separated the two factors. These experiments were done on pregnant monkeys. The fetus was removed by abdominal hysterectomy when the ureteral dilatation had reached the third grade, but the placenta was retained *in situ*. The ureteral dilatation was either sustained or it increased in dimension until the placenta was expelled at term. From then onwards the ureters regained their normal tone. These experiments go a long way towards establishing the double etiology. Their conclusions are, that the physiological changes of the kidneys are primarily related to a state of pregnancy and only secondarily to mechanical pressure of a dextro-rotated gravid

* Presented before the Montreal Clinical Society, April 24, 1940.

uterus. This in my opinion is the first attempt to approach the problem from an unbiased viewpoint. Whether they have arrived at the true solution only time and further research will tell.

X-ray studies.—Roentgen examinations of the genito-urinary tract in pregnancy show changes which are characteristic. Delayed excretion of the intravenous dye occurs, up to thirty minutes instead of the normal five to fifteen minutes, and this irrespective of whether dilatation of the ureter exists or not. With kidney function unimpaired one is at a loss to explain this observation. In this connection some work by Crabtree⁵ may throw some light on the subject. He has shown that the water balance in pregnancy is disturbed, that is, that the fluid output is much greater than the intake in the two weeks following delivery. There is, therefore, a storage of fluids in the blood stream and tissues in addition to that accounted for by the products of pregnancy. This takes care of the excessive fluid losses at delivery and during convalescence. The paradox of delayed dye excretion and other tests of renal function, such as phenolsulphophthalein intramuscularly, twelve minutes' excretion against the normal eight minutes, and the total for two hours of 45 against 75 per cent in the normal and non-pregnant, in the presence of normal blood chemistry figures, may be justified on the basis that the propulsion of the secreted fluid is delayed. Kidney secretion is normal but the transportation of this fluid away from the kidney is inhibited, due probably to atony of the pelvis and ureter of endocrine origin. Traut and his collaborators⁶ have shown experimentally that there is delayed peristaltic activity in pregnancy. We have then normal kidney secretion in a water-logged kidney. The visualization of the urinary tract is that of a toneless, sagging pelvis, a picture resembling the adynamic hydronephrosis of sympathetic origin, a point I emphasized in a previous publication.⁷

A second feature of the x-ray findings is that the lowest third of the ureter is not involved in the dilatation. If, the mechanists argue, the segment of the ureter from the bladder to the brim of the pelvis remains unchanged, why does this portion of smooth muscle structure not participate in the endocrine activity? The third peculiarity of pregnancy dilatation is the deviation of the ureters from their normal course outwards. The appearance is that of bow-leggedness, and is probably due to the distending peritoneum pulling the ureters along with it.

Functional pathology.—The gross anatomical picture of a hydronephrotic kidney varies directly with the location and nature of the obstruction. In pregnancy, where the pressure is exerted on the lower third of the ureter, the impact of obstruction is first ureteral and secondarily pelvic. The reaction of the ureter above the point of obstruction is fundamentally different here, whereas, in the obstructive type, due either to impacted calculi or other obstructions, compensatory hypertrophy of the musculature of the ureter results; in pregnancy the accommodating process is a stretching of the ureter, an expression of endocrine atony. Because of the transient and physiological nature of pregnancy dilatation, regression sets in immediately following delivery and is completed by the end of two months. This, however, is not the case where infection is present; here permanent changes may remain. Hinman⁸ has shown experimentally that even where complete obstruction exists urinary secretion continues, the urine being reabsorbed. When this balance is disturbed secretion ceases and primary atrophy results. Complete sudden obstruction of the ureter will destroy a kidney in from seven to fifty-six days. There is a group of workers who see a relationship between pyelitis and the eclampsias or toxæmias of pregnancy. The basis of this is impaired renal function. This, however has not been corroborated by renal functional tests. Whatever, if any, impaired kidney function results from a hydronephrosis or pyelitis of pregnancy does not set in until long after the pregnancy is over.

CASE REPORT

A female, aged 27, para-2, was admitted to the Jewish General Hospital on July 25, 1939, complaining of gross hæmaturia, pain and tenderness in the right loin for the previous five days. She was six weeks from term. Her previous pregnancies were normal, except for slight bleeding at the sixth month in each case. The history is vague as to its cause and origin.

The patient did not appear acutely ill, except for the pain and definite tenderness in the right loin and right upper quadrant of abdomen. The kidneys were not palpable. She was about eight months pregnant and the head was not engaged. Blood pressure, 138/78.

Urinalysis: (catheter) red, alkaline, albumin 3 plus, sugar 0; microscopically, with loaded erythrocytes, an occasional leucocyte. Blood count: erythrocytes 4,120,000, leucocytes 10,000, hæmoglobin 60 per cent. Blood chemistry: creatinine 1.07, non-protein nitrogen 16.0, urea 30.0 mg. Wassermann test negative.

Uroselectan series.—The left pelvis and ureter showed dilatation compatible with pregnancy. There was no trace of dye in the right kidney area or along the course of the ureter, even at the end of thirty minutes.

Cystoscopy.—The trigone of the bladder was congested, elongated and the interureteric ridge was stretched, a typical finding in pregnancy. No blood was seen issuing from either ureteral orifice. The left ureter



Fig. 1

Fig. 2

Fig. 3

Fig. 1.—Excretory urogram—no dye from the right kidney at the end of 30 minutes. Fig. 2.—Retrograde pyelograms. Tip of right catheter at point of obstruction. Uretrogram shows dilated ureter. Fig. 3.—Three days later—intravenous dye excreted by right kidney. Note blunted calyces and dilated ureter.

was easily catheterized to the renal pelvis and a clear specimen obtained. The right catheter met definite obstruction about the middle third of the ureter which could not be overcome; the manipulation of the catheter resulted in extensive bleeding around the catheter and into the bladder.

X-ray, with the catheter in position, showed the tip of the catheter at the 4th lumbar vertebra; the ureterogram was markedly dilated and kinked. No dye reached the kidney pelvis. The question of induction of labour was considered, but it was thought advisable to temporize and to apply palliative measures. The patient's back was arched, linseed poultices were applied to the loins, and fluids were forced. Three days later the urine cleared and an intravenous pyelography was done. The pressure on the right ureter was apparently relieved; dilated calyces and a markedly dilated kinked ureter were visualized and mild nephroptosis. The patient was discharged. Three weeks later she was readmitted with a similar history as on her previous admission. Palliative measures failed to check the persistent hæmaturia and on August 22nd, three weeks before term, the membranes were ruptured and the patient was delivered spontaneously of a living female child.

Because the right pelvis was never visualized it was thought advisable to do retrograde pyelograms and to determine the relative function of the kidneys by intravenous indigo-carmin.

The right pelvis was dilated and the ureter was both dilated and tortuous. The dye appeared from the left kidney in 3 minutes, whereas at the end of 5 minutes there was only a trace from the right kidney.

R. Chevillard, who records twenty-two cases, one of which is original, states that owing to failure to diagnose correctly the extent of an injury a foreign body may penetrate the orbit and remain there for years without being recognized. The fact that an intra-orbital foreign body may remain unsuspected depends on its nature, size, degree of asepsis, and, most of all, on its location. As x-ray examination is the only certain means of revealing the presence of an intra-orbital foreign body,

SUMMARY AND CONCLUSIONS

The etiology of hydronephrosis of pregnancy rests either on mechanical obstruction or endocrine activity.

Recent animal experimentation favours the double etiology but with greater emphasis on the hormonal state.

The paradox of delayed renal function tests in the presence of normal blood chemistry may be explained on the basis of endocrine atony and fluid balance disturbance in the puerperium.

A case is reported of hydronephrosis with gross hæmaturia. Pre-existent renal pathological disturbance was present.

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every injury to the face requires a radiographic examination whenever the penetration of a foreign body is possible, even if penetration appears unlikely. The symptoms which, after a variable time, reveal the presence of a hitherto unsuspected foreign body are sepsis or motor paralysis. When these symptoms appear extraction of the foreign body is urgent. The operation of choice is orbitotomy.—*Thèse de Paris*, 1940, No. 314. Abs. in *Brit. M. J.*

SPONTANEOUS PULMONIC INTERSTITIAL AND MEDIASTINAL
EMPHYSEMA IN AN INFANT*

BY JOHN H. FISHER, M.D., M.Sc.

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ALTHOUGH interstitial emphysema of the lungs and mediastinum probably occurs more frequently than is at present recognized, as Hamman's recent paper¹ indicates, it seldom produces a fatal outcome. Fisher and Macklin² have reported a fatal case of this condition in a young child in whom the initial cause was the aspiration of peanut fragments into the right main bronchus. In their paper the relevant literature has been included up to January, 1939. Subsequent to that date little has appeared in the literature concerning this subject. McMann and Purcell³ have described a case of subcutaneous emphysema in a newborn infant in which a pneumothorax and mediastinal emphysema were present, presumably due to sudden increase in intrapulmonary pressure during vigorous respiratory efforts, thus differing from the case here reported in which the emphysema occurred spontaneously. Moreover, their case recovered, the emphysema completely disappearing in five days, whereas in my case the infant died in a few hours. Instead of direct leakage of air into the pleural cavity from the alveoli through a rupture in the pleura, would it not be more reasonable to conclude that the air followed the pathway to the mediastinum and pleural cavity, as described by Macklin?⁴ Slot and Brown⁵ have reported a case similar to that of McMann and Purcell. McGuire and Bean⁶ observed clinically a case of "spontaneous" pulmonic interstitial emphysema presenting a syndrome similar to that described by Hamman and an additional instance of this condition occurring in a patient following labour. Both patients made uneventful recoveries. Recently, Marcotte, Phillips, Adams and Livingstone⁷ have pointed out the hazards accompanying the use of positive pressure intratracheal anaesthesia. Such complications, too often terminating fatally, are mediastinal emphysema and pneumothorax.

In this paper it is desired to record the find-

ings in a case of spontaneous pulmonic interstitial and mediastinal emphysema occurring in a newborn infant, which terminated fatally in a few hours.

CASE REPORT

Baby P., a full term, white, female infant, weighing 7 pounds 15 ounces, was born at 2.45 a.m. on October 18, 1938. The mother was a gravida II, aged 24. Her first pregnancy resulted in the normal spontaneous delivery of a normal, living infant, weighing 7 pounds 8 ounces. The antenatal course in this second pregnancy was uneventful, although she was under treatment for syphilis. Her blood serum gave negative Kahn and Hinton tests.

Delivery was normal and spontaneous. No difficulty in resuscitation was encountered. The infant's colour was normal. A routine mucus tube (rubber catheter) was used to clear the throat and mouth. Nothing unusual about the infant was noticed at birth. At no time was there strenuous gasping or unusually vigorous crying. About 3½ hours after birth it was noticed that the baby was very quiet and not crying. Blood-tinged froth was exuding from the mouth and she was quite cyanosed. Auscultation of the chest is not recorded. Oxygen was administered under low pressure by holding a funnel over the nose and mouth a short distance from the face. The cyanosis did not improve, gradually increasing in intensity, becoming generalized and accompanied by dyspnoea. The baby died 5 hours and 45 minutes after birth.

Autopsy.—An autopsy was performed one hour after death. Before opening the thorax pneumothorax was tested for but none found.

Upon opening the thorax, attention was immediately drawn to the voluminous, over-inflated right lung and the presence of numerous gas bubbles and emphysematous blebs under the pleura at the root of both lungs, extending into the anterior and superior mediastinum (Fig. 1). A collection of rather large gas bubbles was found on the antero-medial aspect of the left lobe of the thymus. Although especially looked for, no emphysema of the neck or retroperitoneal tissues was detected. Therefore, the emphysema was confined to the lungs and mediastinum. The thoracic organs were removed *en masse* in order to study the distribution of the escaped air. The lungs were fixed in the distended state by running Bouin's fluid into the trachea under low pressure. The trachea was then ligated and the lungs and other thoracic organs were immersed in Bouin's fluid until thoroughly fixed.

The lungs were separated from their neighbouring organs by cutting through their roots. The lung tissue was cut into moderately thick sagittal slices with a thin, sharp knife. In the right lung several smooth-lined, cyst-like, subpleural blebs (gas bubbles) were seen. These varied in size from 1 mm. or less to 1.5 cm. in diameter. The lung tissue in general was moderately well inflated, containing some emphysematous blebs, but patchy, atelectatic areas were also noted. Much more striking and significant were the accumulations of gas bubbles in the perivascular sheath of the pulmonary vessels. There, the escaped air had dissected the perivascular connective tissue leaving it split into delicate, glistening, cobweb-like strands

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attached to the pulmonary vessels (Fig. 3). The latter, surrounded by gas bubbles, were markedly compressed and collapsed. This interstitial emphysema was more pronounced about the larger pulmonary vessels as they passed from the central part of the lung towards the hilus, but small vessels were similarly involved in some instances.

The chief gross pathological features are illustrated in Figs. 2 and 3. The bronchi gaped open and contained no gross exudate and no evidence of bronchial obstruction was found. The left lung in general was atelectatic and much smaller in volume than the right. Parts of the left lung sank in water and the left lung as a whole, did not float nearly as readily as did the right lung. However, some patchy areas of gross alveolar ectasia were present and a few subpleural emphysematous blebs were detected along the cardiac impression and at the hilus, but none else-

where. The interstitial emphysema was less extensive than in the right lung. However, it was seen that, surrounding at least four pulmonary vessels, the perivascular sheath was stripped up in a similar manner to that described in the case of the right lung. The perivascular air bubbles were found chiefly in the central and hilar parts of the lung. No gross evidence of bronchial exudate or obstruction was found.

The heart showed no congenital anomaly and, apart from slight dilatation of the right atrium and right ventricle, it appeared normal. Gas bubbles were present in the interlobular connective tissue of the thymus but the thymic tissue itself showed nothing unusual. The other organs, including the brain and its coverings, presented nothing of significance.

Microscopic findings.—Microscopic sections served to confirm the gross impressions. In the left lung the alveoli for the most part were collapsed and quite

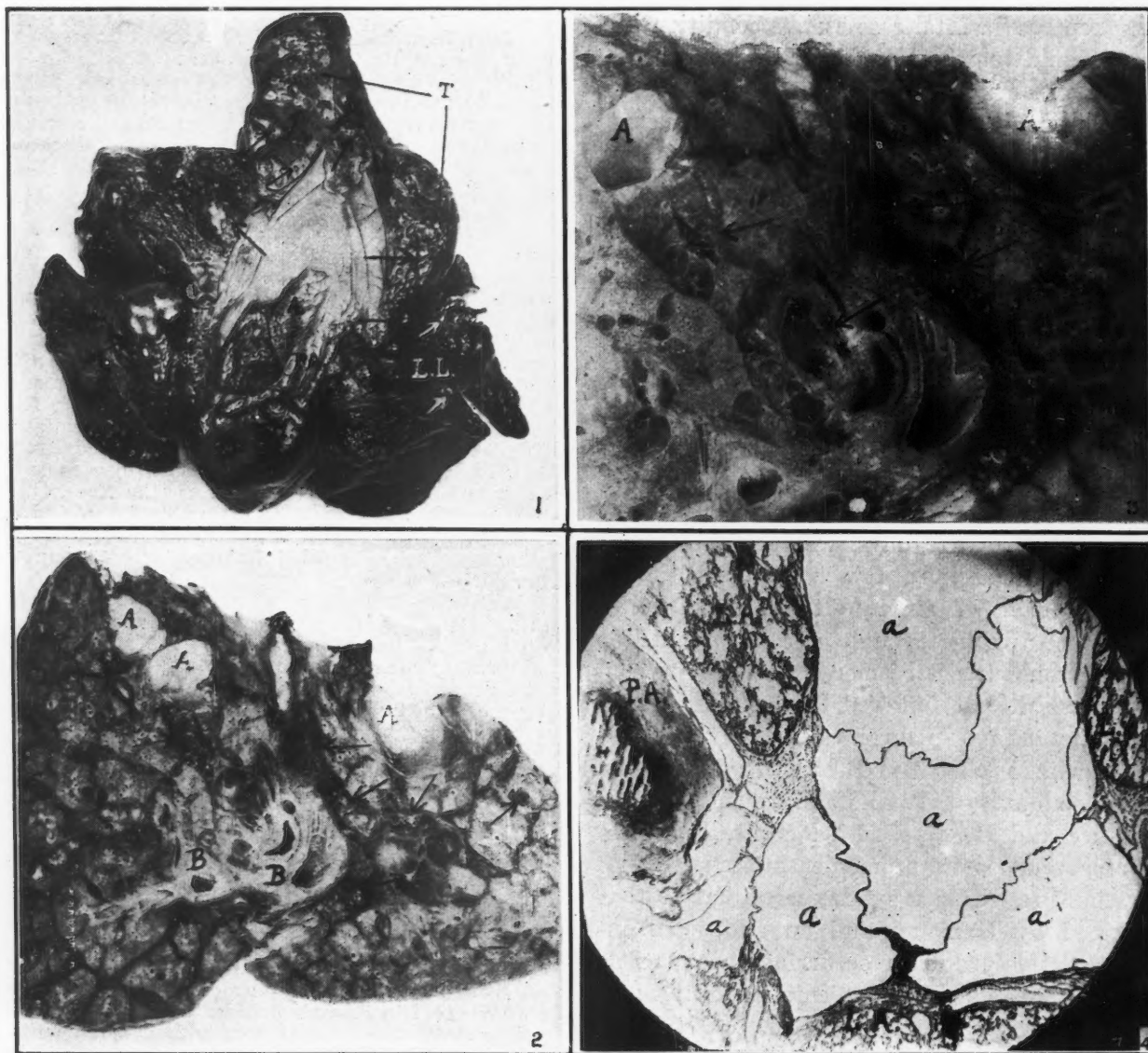


Fig. 1.—Fresh thoracic organs removed from the body *en masse* viewed from the front. The pericardium has been opened. It and the thymus have been lifted up and turned back to expose the lung roots. Air blebs (arrows) are seen over the thymus, at the lung roots and in the lung tissue. A. = aorta; P.A. = pulmonary artery; H. = heart; R.L. = right lung; L.L. = left lung; T. = thymus. **Fig. 2.**—Enlarged view of slice of fixed right lung showing subpleural air blebs (A.) and air bubbles distending and dissecting the perivascular sheaths (arrows). Note the pale, over-inflated lung tissue. B. = bronchus. x 2.2. **Fig. 3.**—Higher magnification of a field in the slice of lung shown in Fig. 2. At the top two large, subpleural blebs are seen (A.). In the central area, the perivascular sheaths have been distended with air bubbles and stripped up into delicate, cobweb-like structures (arrows). The pulmonary vessels are compressed and flattened. x 4. **Fig. 4.**—Photomicrograph of a field from the left lung showing a pulmonary artery (P.A.) on the left and air bubbles (a.) distending the perivascular sheath. Lung alveoli (L.A.) are seen surrounding the sheath. x 72.

markedly atelectatic. About some of the larger pulmonary vessels the sheaths were distended with air. The outstanding feature in the sections of the right lung was the large amount of air in the perivascular sheaths. The pulmonary vessels, both large and small ramifications, were compressed and flattened by the surrounding air pressure to such an extent as to seriously impede blood flow through them. The interstitial emphysema is illustrated in Fig. 4. The lung tissue of the right lung showed much more alveolar ectasia than that of the left lung.

COMMENT

It is probable that this infant's left lung did not expand properly after birth and remained atelectatic, being greatly diminished in volume. Consequently, an adaptive or compensatory over-inflation of the right lung, as well as localized, patchy areas of alveolar ectasia in the left lung, developed. This pronounced stretching of the alveoli probably produced multiple ruptures of the alveolar walls, allowing air to escape into the perivascular sheaths, from there to the mediastinum, and beyond in a manner fully described by Macklin.^{4,8} I am convinced that the compression of the pulmonary vessels by the air in the perivascular sheaths, together with the mediastinal emphysema, explains the infant's cyanosis, dyspnoea and circulatory failure.

Apparently healthy alveoli may rupture spontaneously without increased intrapulmonary pressure, as Hamman has pointed out. In this infant no vigorous crying occurred and no forceful methods of resuscitation were employed. I feel that the administration of oxygen had nothing to do with the development of the emphysema since the cyanosis and dyspnoea made their appearance before the administration and, further, the gas was administered through normal inhalation without any positive intratracheal pressure.

It is quite possible that the pulmonic interstitial and mediastinal emphysema in this newborn infant bore a graver significance than in an older child or adult, since in the infant the pulmonary vessels would be more compressible and the atria of the heart more collapsible than these structures in older persons, which possess a heavier, better developed musculature. In

other words, it would appear that the prognosis is less favourable in the very young.

In the study of post-mortem material for pulmonic interstitial emphysema, the importance of fixing the lungs in the distended state after the method above-described is emphasized. In this way shrinkage and collapse of the lung tissue is prevented and thus dispersion of the gas bubbles and destruction of their relations to the pulmonary vessels and other lung structures are avoided.

SUMMARY

A case of pulmonic interstitial and mediastinal emphysema occurring spontaneously in a newborn infant and terminating fatally in a few hours is described. It is considered that the emphysema resulted from an over-inflation of the alveoli producing multiple ruptures and escape of air into the perivascular sheaths. It is believed that death was due chiefly to obstruction to the pulmonary and mediastinal circulation resulting in a severe degree of anoxæmia and circulatory embarrassment. While the non-fatal, clinical form of this emphysema seems to be not at all rare, it often passes unrecognized; some cases, however, occasionally end fatally. Fixation of the lungs in the distended position is important in studying the distribution of the escaped air and its relations to the lung structures.

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A COMPARISON OF DARK ADAPTATION (BIOPHOTOMETER) TESTS ON FRENCH AND ENGLISH SCHOOL CHILDREN IN A QUEBEC COMMUNITY*

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IT is generally agreed that hemeralopia is one of the earliest indications of vitamin A deficiency, the explanation being that, the regeneration of visual purple necessary to acuity of vision requires a continuous supply of vitamin A. Many attempts have recently been made, using various types of instruments, to correlate the rate and extent of regeneration of the visual purple of the eye with the status of vitamin A nutrition. The measurement is accomplished by first bleaching the visual purple in the rods of the retina with a bright light and then determining the time necessary to recover clear vision. That the methods truly measure the rate of regeneration of visual purple and hence, indirectly, the eye's supply of vitamin A is agreed, but the tests have frequently not been satisfactorily controlled so as to rule out factors other than vitamin A deficiency. The test is valuable, nevertheless, for detecting individuals with sub-clinical deficiencies and thus indicating the need for dietary measures to be taken.

In our own community an excellent opportunity was afforded to make a comparative test of English and French-Canadian children in separate schools, whose diets were believed to differ in many particulars. A similar technique to that employed by Pett⁵ was used to determine the rate of regeneration of the visual purple. About 300 school children (11 to 16 years) were tested on three different occasions; the group included almost equal numbers of children of both sexes in each section, thus facilitating an accurate statistical analysis of the data.

EXPERIMENTAL

Most of the tests used depend on the skill of the operator and intelligent co-operation of the subject. Pett⁵ developed an apparatus in which both these factors are reduced to a minimum, and which makes it possible to perform the test in a short time, thereby permitting duplicate

readings without the subject becoming unduly fatigued.

The design of our instrument is shown in Fig. 1 and is self-explanatory. For the first trial in May, 1939, the voltage was not controlled, the intensity of the bright light ranging between 145 to 155 foot candles at the eye. The dim light, however, was controlled by a rheostat and the light passed indirectly through a green filter (530 m μ) such that the entire hole was evenly illuminated. In the subsequent tests performed in November, 1939, and February, 1940, on the same groups of school children as in May, the voltage of both the bright lights and dim light was controlled by means of a variac so that the bright light had an intensity of 150 foot candles at the eye, while the dim light filter gave off an illumination of 0.025 millilamberts per square centimetre at a distance of approximately 100 cm. from the eye.

The subject being tested was blinded for 1 minute exactly, and then reminded to tap the table on seeing the green light, then allowed to rest for the balance of the minute in the dark. Explanations and instructions were given to the subject in his own language, to prevent nervousness and confusion. Each individual was tested three times in each trial. In May and November the tests were repeated without interruption on the same day, but in February the tests were carried out on three consecutive days. The mean of the two closest readings was accepted; these were usually the second and third, but not necessarily. The change in technique from November to February caused no significant variation in the results. Any subjects who seemed to give unsatisfactory results were eliminated from this survey. About 1 per cent of the children failed to give satisfactory co-operation, and these were detected by carrying out the test without illuminating the dim light.

It has been suggested by Ditchburn¹ that 100 foot candles at the eye for 3 minutes is necessary for maximum blinding. Pett⁵ used 50 foot

* From the Faculty of Agriculture, Macdonald College, McGill University, Journal Series No. 145.

candles for half a minute, but we have found that there is no appreciable increase in regeneration time when blinding with a light of 150 foot-candles at the eye for periods of greater than 1 minute. It was also found that this treatment cancelled all previous history of the patient, *viz.*, entering the room directly after being in a dimly lit room or coming in out of the sunlight, etc.

Notwithstanding the fact that the interior of the box was painted with flat white paint and the end covered with heavy white drawing paper, much pink after-glow was experienced by all subjects, although there were disagreements as to the exact tint. This led to the selection of the 530 m μ filter (green) for the dim light. The second reason for the choice of this wave

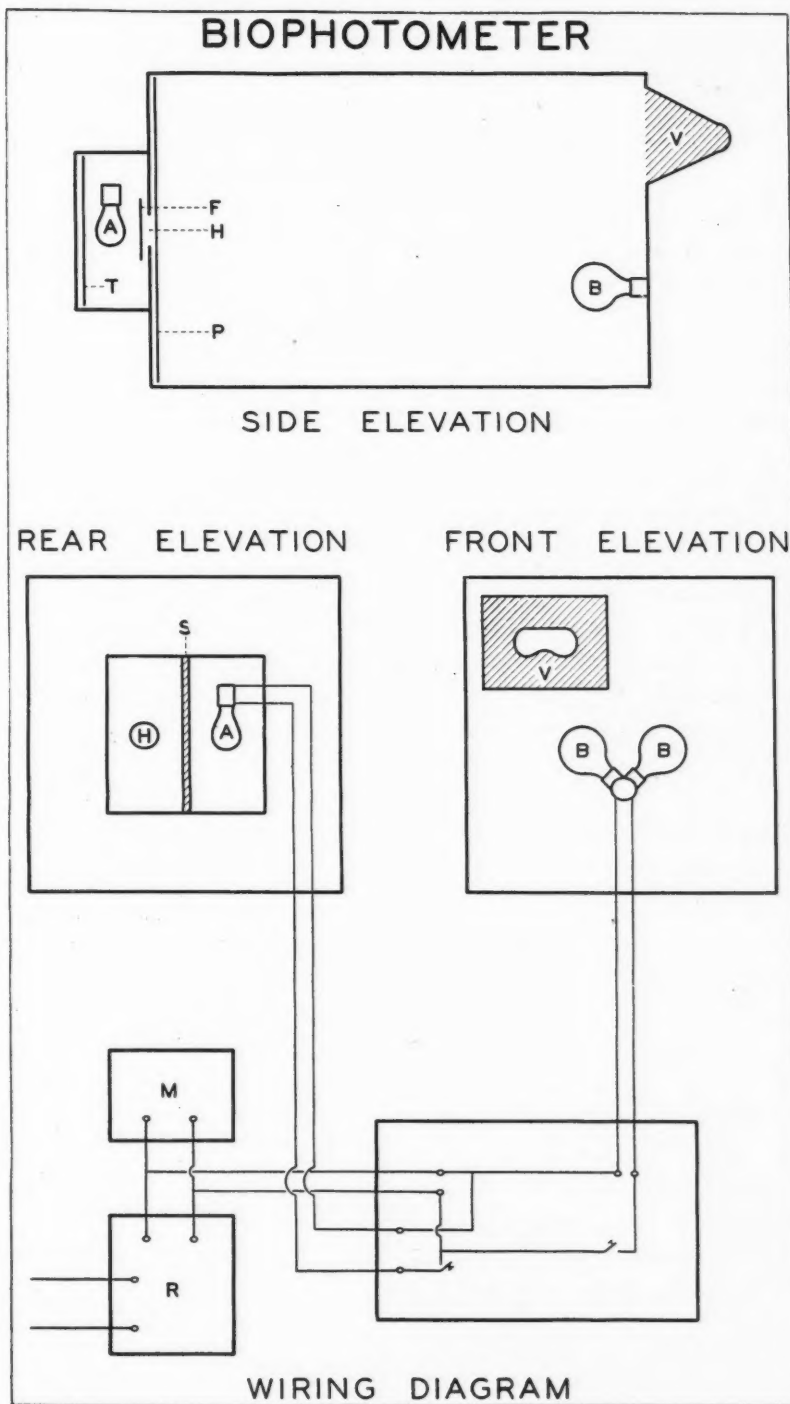


Fig. 1

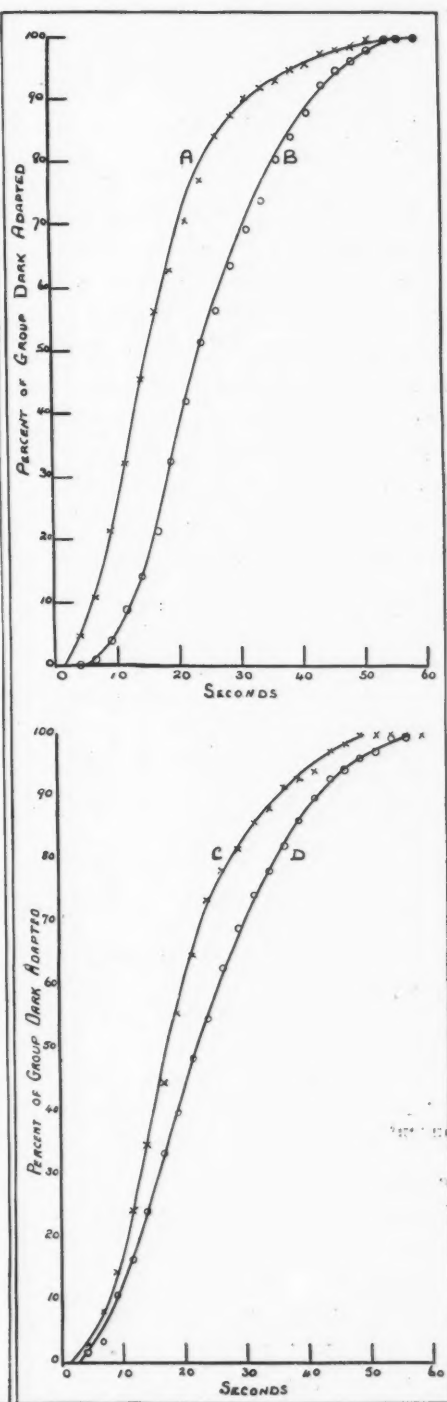


Fig. 2

Fig. 1.—A, 2 cp. lamp; B, 200 w. bright lights frosted; F, 530 m μ filter; H, 3.2 cm. hole; M, volt-meter; P, paper surface; R, variac; S, shield; T, tinfoil reflecting surface; V, visor. **Fig. 2.**—Time required for dark adaptation. A, English school; B, French school; C, boys; D, girls. Graphs showing the difference between the English and French school, and boys and girls. The number of individuals adapted is expressed as a percentage of the total individuals in each group.

length is that the sensitivity curves for the eye, to different wave lengths at high and low intensities intersect at 530 m μ (Hecht,⁴ Hardy and Perrin³). If then the subject sees it as a green light it indicates that rod regeneration is being measured as well as cone, since rods are largely responsible for colour vision.

For the control of voltage a constant voltage transformer might be used to advantage in place of a manually-operated variac; some arrangement would be necessary, however, for equalizing the load on each line.

RESULTS

The initial experiment in May, 1939, was used to determine the effect of feeding vitamin A concentrate to children with a regeneration time longer than that of 95 per cent of the local English school. This time obtained by statistical analysis was found to be 39 seconds. The children were given approximately 25,000 international units of vitamin A daily for 15 days and the decrease in regeneration time was determined by difference on the fifth and fifteenth days. The data at the bottom of Table I show that the

TABLE I.

MAY, 1939

Group	Number tested	Regeneration time in seconds	P.E. of mean
English girls ...	73	24.67	± 0.63
English boys	68	19.45	0.58
French girls ...	73	35.68	1.16
French boys	73	29.09	0.80
All girls	146	30.17	0.69
All boys	141	24.44	0.53
All English school	141	22.01	0.45
All French school	146	32.38	0.71
All children	287	27.36	0.45

VITAMIN A THERAPY*

Number of cases	Duration of therapy	Decrease in regeneration time (seconds)
39	5 days	9.0 \pm 2.3
39	15 days	11.4 \pm 2.1

* 20,000 to 30,000 international units of vitamin A concentrate daily.

decrease after vitamin A therapy was marked. No examination of the retina was performed to locate any pathological conditions.

The statistical analysis of the results from 287 children shown in Table I revealed that there was a marked difference between the sexes and also between the two schools. It was first thought that this might be due to fluctuations in line voltage at the different testing centres. The test was repeated therefore in November and February, using a variac and also altering slightly the technique as already stated.

The difference between the two schools was still pronounced, as will be seen from Table II,

TABLE II.

NOVEMBER

Group	Number tested	Regeneration time in seconds	P.E. of mean
English girls ...	66	20.63	± 0.73
English boys ...	60	15.07	0.48
French girls	67	29.22	0.86
French boys	66	27.02	0.56
All girls	133	24.95	0.54
All boys	126	21.33	0.52
All English	126	17.98	0.45
All French	133	28.12	0.52
All children	259	23.19	0.39

FEBRUARY

Group	Number tested	Regeneration time in seconds	P.E. of mean
English girls ...	49	21.72	± 0.82
English boys ...	45	16.80	0.59
French girls	61	29.49	0.82
French boys	46	25.41	0.82
All girls	110	26.03	0.61
All boys	91	21.15	0.55
All English	94	19.37	0.52
All French	107	27.74	0.59
All children ...	201	23.82	0.42

as also was the difference between the sexes. The change of the group as a whole from November to February is not marked. In Fig. II these differences are shown by a type of ogive curve where the regeneration time of the individuals is expressed as a percentage of the whole group. It will be seen that at no point do these curves intersect, indicating that the difference is found at any regeneration time.

Table III shows the percentage of children

TABLE III.

PERCENTAGE SUBNORMAL REACTORS*

Group	May percentage	November percentage	February percentage
English girls	10	15	16
English boys	4	2	0
French girls	36	33	36
French boys	22	29	24
All girls	23	24	18
All boys	14	16	12
All English school	7	9	9
All French school	29	31	31
All children	18	20	20

* Individuals with a reaction time greater than 95 per cent of the English school children.

with reaction times greater than 95 per cent of the English school. Compared to the English children a high percentage of the French children showed a subnormal reaction.

SUMMARY

1. It has been found that in apparently normal healthy children with long regeneration time the time of dark adaptation may be reduced by vitamin A therapy.

2. Of the two local schools tested the difference between the schools may be detected by means of a biophotometer, and there is a perceptible difference between the boys and the girls in each school. This difference is found in the mean of the groups and also by the percentage with excessive regeneration time. Compared to the English children a high percentage of the French children showed a long regeneration time.

3. There was no significant increase in the

regeneration time of the group as a whole from November to February.

The authors wish to thank Professors E. W. Cramp-ton and D. K. Froman for technical advice; Ayerst, McKenna & Harrison for supplying the vitamin A concentrate; and the local school authorities for their undivided co-operation. We are also indebted to Mr. Paul Lajoie for assistance in carrying out the tests.

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PRACTICAL ASPECTS OF ALLERGY*

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THE subject of allergy is growing daily in its scope and importance. It is variously estimated that from 1 to 4 per cent of the population is affected, so that within the limits of this presentation it will be impossible to do more than to indicate some of its practical aspects.

At the outset we must needs state what we mean by allergy. There is of course the broad immunological conception which is used to explain such conditions, for instance, as the rash in scarlet fever or the joints in rheumatic fever. Here, secondary manifestations of a bacterial invasion occur remote from the site of infection and without the immediate presence of the bacterial agent. This type of allergy is exemplified by the Mantoux tuberculin test or the brucella-gin test, where the reactions are of the delayed inflammatory type. On the other hand, there is allergy in a narrower more clinical sense which has to do with the allergic disorders, such as hay fever, bronchial asthma and some types of eczema. In these, according to Von Pirquet's original definition, an individual reacts to a normal substance in an abnormal way. It is this latter aspect of allergy with which we shall attempt to deal. Here the reactions are urticarial in character and immediate, in contradistinction to the inflammatory type, as Detweiler¹ has recently reminded us in his excellent summary.

DEFINITION

Very briefly, manifestations of allergy may

develop in a sensitized person upon exposure to the specific allergen to which sensitization has been acquired. Coca and his school, who do not admit the fundamental identity of anaphylaxis and allergy, prefer the term atopy, the allergen becoming the atopen; but the distinction would seem to be needless. In a broad way, if we retain "anaphylaxis" for the experimental animal, and "allergy" for the human manifestations, with certain qualifications, we shall not go far wrong.

Serum sickness is aptly termed by Zinsser "Human horse-serum anaphylaxis". Anaphylactic shock following the injection of therapeutic sera is too well known to need description. So also after the injection of pollen extract or other protein material, or even after the ingestion of certain foods by sensitive persons, violent reactions may occur which by their nature belong in this category. A case comes to mind of a patient who gave himself an enema after lubricating the nozzle with his wife's hand lotion. Almost immediately he had a most alarming reaction with violent sneezing, intense bronchospasm, and angio-neurotic oedema. The hand lotion contained linseed as a base, a substance he had learned from experience he dare not touch, having once eaten it in a quack cereal with somewhat similar effect. Another patient had convulsions after being stung by bees at a picnic. In your own experience anaphylactic reactions of this kind no doubt have occurred. Usually, however, in human beings, the manifestations of protein sensitivity are more gradual, and such conditions as hay fever or bronchial asthma develop. So a patient who has acquired sensitivity to some substance such as ragweed pollen, or eat

* Read at the Seventy-first Annual Meeting of the Canadian Medical Association, Section of Medicine, Toronto, June 19, 1940.

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dander protein, may react with a typical attack of hay fever or asthma upon inhalation of the specific protein. You will recall how a guinea pig rendered anaphylactic by a sensitizing dose of horse serum can be "shocked" by a second injection sometime later. Sewell observed that **if, instead of a second injection, the animal be subjected to the intra-nasal instillation of the serum, it would react with a typical paroxysm; and, further, Rosenau and Anderson succeeded in sensitizing guinea pigs to horse dandruff by keeping them in a stable where they were exposed by inhalation to the horse dust. These were important gains in knowledge.**

Sensitization to foods may be acquired in different ways in a person allergically disposed through heredity or otherwise; not only via an abraded mucous membrane but in the presence of stasis or increased permeability of the intestinal wall absorption of the unsplit protein molecule may be the cause.

PHYSIOLOGY

A few words may be said about the physiology of allergy and anaphylaxis; and in this connection reference must needs be made to histamine. Experimentally, the anaphylactic reaction in a given species of animal may be reproduced in the same species by histamine. Typically, the reaction is a two-fold one; first a constrictor effect on smooth muscle tone; and, second, capillary dilatation and oedema. So we can understand the bronchospasm, the oedema of the bronchial mucosa, and stimulation of the mucous glands in asthma. Further, this capillary effect, first vasodilatation and engorgement, then exudation from increased permeability, is of course responsible for the nasal symptoms of hay fever and allergic rhinitis, causing fullness and obstruction, sneezing from irritation of the nerve endings, and then rhinorrhœa.

Dale's classic experiments with isolated uterine muscle strips from guinea pigs previously sensitized to horse serum, postulate and prove the presence of specific antibodies in relation with the smooth muscle cells, as when to the muscle preparation in Ringer's, horse serum is added, the muscle immediately goes into tonic contraction. What happens roughly is this; the introduced antigen is split by the antibodies into end-products of the nature of histamine, which cause the characteristic effects of spasm of smooth muscle and oedema.

When an allergen such as egg white is scratched into the skin of a sensitive child, the antibodies already in the skin cause a splitting of the allergenic protein into what has been called "H" substance, and this sets up the characteristic skin reaction consisting of a central wheal from capillary engorgement and escape of plasma, with a surrounding zone of erythema. That this conception is well founded and no figment of the imagination is amply supported by the Prausnitz-Küstner reaction—or the passive transfer of antibodies from a sensitive to a non-sensitive person. For if, for instance, the serum of a fish-sensitive patient be injected intradermally into a non-sensitive one, and 48 hours later this site be tested with the fish protein, a characteristic reaction will occur. The allergic response in any individual depends upon what tissue is affected—the so-called "shock organ".

Dr. Bram Rose, at the Royal Victoria Hospital, has been engaged in extensive studies on histamine and histaminase. He finds that the blood histamine in eczema is uniformly high, whereas in angioneurotic oedema when the oedema is fully developed it is uniformly low. The blood histamine in asthmatics seems to vary, and as yet he has not been able to establish any conclusion in this regard. The rôle of histaminase is still largely in the experimental stage.

CRITERIA OF THE ALLERGIC STATE

One might at this juncture ask "What are the criteria of the allergic state, and how do we recognize the allergic patient? There are five important points: (1) The history and the nature of the complaints. (2) The history usually of other allergic manifestations at some period. (3) Eosinophilia. (4) Positive protein tests. (5) The family history.

I believe in no other class of patient is it more requisite to take a detailed history. Many examples could be given, had we time, to show how the history dovetails into the other findings—and the results of tests. As I put it to myself the history gives the picture on the cover of the jig-saw puzzle-box. The next job is to find the pieces and fit them together, and it may take time and patience.

The history usually of other allergic manifestations at some period, hives, eczema, pruritus, angioneurotic oedema, asthma, recurring colds of non-infectious type, mucous colitis or idiosyncrasy to foods, migraine, etc.

Eosinophilia: (a) in the blood, (b) in the tissues, (c) in secretions. The hæmogram in our experience gives certain valuable indications as to whether the case is essentially allergic, essentially bacterial, or a combination of the two: the white cell count, the differential and sedimentation rate being of prime interest.

Pathological studies of tissues from the nose and sinuses of these patients carried out at the Royal Victoria Hospital by Dr. T. R. Waugh have most abundantly corroborated the dicta of J. A. Munro Cameron,² when he says: "These allergic types are in their histology as different as possible from those of acute inflammation as ordinarily found. Eosinophil cells can of course be found in any inflammation, especially in the gastrointestinal tract, but this nasal invasion of these cells amounts to an infiltration to the exclusion of the normal inflammatory cells: and the oedema of the matrix is equally distinctive and only just less impressive". The nasal discharge and the sputum may also share in the eosinophilia.

And yet there are nose and throat surgeons who continue to display undaunted pertinacity in removing polyps *ad infinitum*, and, "alas and alack", tonsils, for the relief of the "allergic cold".

SKIN TESTS

Skin tests of course are of great importance. Where positive the simple scratch tests are probably more reliable in a general way, particularly with foods. But in the presence of negative scratch tests, intradermal tests may yield valuable information. Often intradermal tests or even scratch tests would appear to be non-specific from an irritable skin, when great caution is required in interpretation. Probably, if pseudopodia are present these positives are more reliable. Delayed reactions may be important. Rackemann³ says that positive tests may indicate past history rather than present illness. Also, we have had cases where positive skin tests seemed to antedate the clinical manifestations. I share the impression with many others that tests with inhalants, in adults at any rate, are more reliable than tests with foods, which, however, are by no means to be ignored. The great difficulty is that skin tests and clinical sensitivities are apt to be multiple, and the information gained by tests must be correlated with the history and clinical findings, which should not omit a physical examination. Heart disease, tubercu-

losis, and bronchogenic carcinoma have all been found in patients referred for allergic investigation. On the other hand, the chest x-ray in asthmatics may often simulate tuberculosis, when in reality the suspicious shadow is due to transitory atelectasis.

If food tests are negative—and the condition is still regarded as possibly due to food allergy—then resort must be had to some form of elimination diet. Patch tests are of value only in contact dermatitis. Occasionally resort may be had to tests by exposure, as with the ophthalmic test with dry pollen.

In these allergic states heredity undoubtedly plays a leading rôle, and it is important to inquire into the family history.

INHALANT ALLERGY

The nose and accessory sinuses may bear the brunt in allergy due to pollens and other inhalants, the eyes often sharing in the irritation, but sooner or later the bronchial tree becomes affected and asthma with or without associated upper-respiratory symptoms develops.

An important question is "When is a cold allergic, or when has your allergic patient got a cold"? The allergic cold usually commences suddenly without prodromata or malaise; sneezing, stuffiness and rhinorrhœa prevail for a longer or shorter time and terminate rather abruptly, the discharge never assuming a mucopurulent character unless there is also infection. Post-nasal discharge, if present, is not yellow or heavy, sinus pain is unusual, and other members of the household are not affected. The trouble is that allergy and infection so frequently combine in the same case, the boggy oedematous mucous membrane of the allergic nose being open house for the pathogenic bacteria hovering around.

In true hay fever the symptoms are of course seasonal, in spring, early summer, and late summer or fall, due to the pollens of trees, grasses and ragweed in reverse order of importance. It is not uncommon to find cases that each year seem to drag on longer than the pollen season, due to superadded infection, or to other allergenic inhalants or foods keeping up the symptoms. A common report from adequately treated pollen cases, too frequent to be mere coincidence, is that their usual winter colds have been strikingly benefited. As I understand it the insulted mucous membrane becomes oedematous and swollen, drainage is incomplete, the acces-

sory sinuses share in this œdema, as may be demonstrated by lipiodol as part and parcel of the allergic reaction: and then there is super-added infection and the process is perpetuated.

Many hay fever subjects have an associated mild wheeze, and no inconsiderable number of asthmatics originate as hay fever, though they may later cease to be seasonal due to other complicating allergic or infectious factors. There is ample reason for believing that pollinosis uninfluenced by treatment leads to chronic thickening and polypoidal change in the nasal and accessory sinus mucosa, and this is prone to become secondarily infected in the course of time. It is customary nowadays to speak about reversible and irreversible reactions. The first is œdematous or allergic swelling which subsides when the irritant ceases to act or the patient is desensitized to it. The irreversible reaction is one which does not subside and may call for surgery to eradicate it.

Asthma is to be expected in hay fever patients, with chronic bronchitis and emphysema as sequels; and pollen asthma in the absence of frank hay fever is not uncommon. We have seen cases of unexplained intractable cough without asthma which were finally tracked down to pollens, and controlled by pollen injections. The same may be said of other inhalants.

The proper treatment of hay fever by desensitization goes much farther, therefore, than alleviating symptoms, important as that is. But its chief value is in preventing, or at least modifying greatly the baneful tendency for the condition to gather momentum and for serious complications to develop.

Perennial hay fever, vasomotor or allergic rhinitis, spasmodic rhinorrhœa, call it what you will, has many aliases; it is the *bête noir* of the rhinologist and allergist as well. These cases are often very difficult and some at least cannot be traced to extrinsic allergy of any kind. My rhinologist colleagues tell me that the appearance of these noses is very characteristic; in a typical case the mucous membrane is pale, swollen and boggy, and usually does not shrink down well with cocaine. The neurotic element is frequently prominent. One lady comes to my mind who caused us much sorrow and tribulation, but taught us valuable lessons. Her trouble began as ragweed hay fever, but dragged on each year long after the season was over. She improved each winter on going to Florida, but symptoms soon returned on coming back home.

Then we discovered that she was sensitive to her own house dust. An ultimate cure was obtained with autogenous dust extract in addition to perennial ragweed, as well as having due regard to certain foods to which she gave positive tests. The improvement in this woman's mental outlook once her condition was controlled was most striking and interesting. Not infrequently these cases progress into asthma of a very severe type, as Rackemann has stated. They are not benefited by surgical measures as a rule.

Pollens are not the only cause of inhalant allergy, though of first importance. Animal dander, such as dog and cat, horses, cattle if not in the barn; then on the bedroom floor in the form of ozite, feathers in pillows, the kapoc which is tried as a substitute, orris root in cosmetics and soaps, and common house dust. Housewives may become sensitive to wheat flour or oatmeal by inhalation, bakers to wheat, nurses to linseed poultices, or farmers to the linseed meal in cattle cake. Wave sets may be the source of karaya gum or linseed allergy.

A new field is opening up in the conception that certain mould spores may be very important in causing seasonal hay fever and asthma. Some cases of summer asthma inadequately explained on the basis of pollens may be accounted for in this way. Treatment is by desensitization in the same manner as with pollens.

FOOD ALLERGY

There is no doubt that sensitivity to food occupies an important place in the etiology of allergic states. In our experience, more often, though not always, the rôle is a secondary one, and elimination diets have not aided us materially.

It is common enough to encounter patients who exhibit extraordinary sensitivity to certain foods which they have learned for themselves they dare not eat. But there are many others whose allergic responses are not immediate and violent, but gradual and insidious. Many asthmatics are greatly improved by the omission of certain foods, but generally with coincident attention to other prevailing factors. But since sensitivities are more apt to be multiple, it is not so common, though it does occur, to find cases in which the food factor is the pivotal one. This is true of allergic rhinitis as well as asthma, many skin conditions such as atopic eczema or neurodermatitis, urticaria, some cases of purpura, and

possibly acne. We have been in touch for several years with a physician whose recurrent attacks of punctate keratitis were associated with allergy to milk and eggs to which he consistently reacted by the ordinary scratch test.

Gastrointestinal conditions may at least be influenced by food allergy. A lady patient of my own lost her horse asthma with the advent of the motor car, unless she went to stay in Bermuda. For many years she was a gastrointestinal invalid suffering from mucous colitis and irritable colon, with periods of relative freedom. Since it was discovered that she was sensitive to milk her case has been much more amenable to handling. Two patients with duodenal ulcer are known allergies, including sensitivity to foods. One had at least three or four hæmorrhages while at McGill within two years. We considered that attention to the allergic foods constituted an important part in his management. The other, while his ulcer was symptomless, immediately got pain and melæna after eating bananas, to which he was sensitive. Ulcerative colitis at one extreme, and minor attacks of abdominal cramps, vomiting and diarrhœa at the other, may be traced to these causes. I recall only one case in a young child in which allergy to milk seemed to be the cause of severe dysuria. In two children with epileptic attacks the elimination of positive foods appeared to be directly responsible for disappearance of the seizures. A college student, the victim of petit mal, a known but untreated case of pollinosis, was found to be extraordinarily sensitive to cottonseed, a common ingredient in cooking.

Allergic headache and allergic migraine, as well as allergic epilepsy, probably do exist, but it is doubtful if as commonly as certain enthusiasts have led us to believe.

A gentleman—a known allergic, with sensitivity to a great many foods, suffered from recurring dizzy attacks associated with some lowering of the blood pressure. Safeguarding the diet according to his positive tests brought about relief from his dizziness. Another patient had a syncopal attack, with some epileptiform features, while at a banquet. Although he was hospitalized, no other cause was forthcoming than the fact that he had eaten freely and simultaneously of several foods to which he gave a 4 or 5 plus reaction, a certain amount of alcohol probably aiding direct absorption from the stomach.

DRUG ALLERGY

Drug allergy is not infrequently met with; aspirin, quinine, codeine, and morphine have accounted for angioneurotic œdema, intractable asthma and severe dermatitis. Sensitivity to ephedrin is not unknown. Allow me to sound a warning against the administration of morphine, particularly if combined with atropine, for "status asthmaticus", especially where there is cyanosis and the bronchial secretion is not free. These cases are often associated with the presence in the bronchi of casts or plugs of tenacious mucus; the morphine abolishes the already weakened cough reflex, while the atropine further inspissates the plug so as to enhance the state of asphyxia, and many asthmatic deaths are thus brought about.

PHYSICAL ALLERGY

Physical allergy is interesting though relatively rare. Angioneurotic œdema after exposure to cold was studied by Dr. McLellan in our clinic. Application of ice to the skin anywhere produced an urticarial wheal. This condition lasted for several weeks coinciding with the period of an upper-respiratory infection. During this time this patient, a private nurse, had to take a taxi regularly to her work, as exposure to outside cold air invariably caused angioneurotic œdema. It is believed that many cases of drowning are explained by allergy to cold. Also we have seen allergy to heat causing urticaria and angioneurotic œdema in a woman with diabetes and hypertension. This reaction could be induced by exposure in a hot bath (at 45° C.) and was attended, Dr. Rose observed, by a marked initial rise in the blood histamine, followed by symptoms of collapse.

Very briefly, I should like to call your attention to a rare but interesting condition, periarteritis nodosa, which is sometimes found in connection with asthma. Suspect this condition, says Rackemann,³ when in asthma of a severe intractable type there is pain and numbness in the extremities, and a high blood eosinophilia, over 25 per cent. I recall two such cases, both of whom died suddenly with purpuric manifestations. One had 70 per cent blood eosinophilia, and the other 59 per cent. Unfortunately, neither came to autopsy. A third patient, possibly belonging to this group, is still living. She also is an intractable asthmatic of many years standing, and at one time had severe pains

in the extremities, a petechial rash and a blood eosinophilia of 70 per cent.

CONCLUSION

In this field, which is new and but partially explored, we have to be critical and constantly on guard, lest, to paraphrase Montaigne, "we

lack the power to weigh things by themselves, and that we be not easily misled by chance appearances".

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THE TREATMENT OF DISPROPORTION*

By N. D'ARCY FRAWLEY

Toronto

PHYSIOLOGICALLY, the fetus accommodates its size, attitude and position to the maternal pelvis. Failure of such accommodation results in disproportion with impeded or obstructed labour; the fetus resting at the inlet, within the cavity, or at the outlet of the pelvis. Perhaps the most practicable approach to a discussion of this complex and difficult subject is to consider briefly the indications and contraindications of the various forms of treatment at our disposal.

Non-interference.—Before deciding on a policy of non-interference it is essential to have a thorough knowledge of the patient's general condition; of the shape and diameters of the pelvic inlet, cavity and outlet; of the size, attitude and position of the fetus, as well as the rate and quality of the fetal heart. The adaptation or otherwise of the fetal head to the brim of the pelvis and any deviations from the normal in character and results of the expulsive forces should be carefully noted lest more active treatment becomes necessary. The treatment outlined differs in no essential detail from the modern method of conducting a normal case, except, realizing that the resistance to be encountered is increased in disproportion, one is especially alive to signs of fetal or maternal distress which might demand operative aid, and any procedure that might prejudice the employment of Cæsarean section must be avoided until all possibilities of that eventuality have disappeared.

If no contraindications arise to this non-interference policy the labour is allowed to run its natural course. These cases are frequently prolonged and every effort is made to lessen the

mother's distress by adequate analgesics and anæsthetics. If contraindications do arise and interference is necessary we have had a test of labour that will assist us in our choice of operative aid.

The test of labour.—By a test of labour is meant a trial by the vaginal route, made under such conditions that the obstetrician may with comparative safety turn to the abdominal route if it appears advisable. Its value and limitations will be discussed under Cæsarean section.

Cæsarean section.—Laparohysterotomy may be absolutely indicated for disproportion, or it may be chosen because the prospects for the mother or child or both appear relatively safer than by vaginal delivery. Absolute indications are not common. It is agreed that vaginal delivery of a full term living child is impossible if the antero-posterior diameter of the inlet is below 7.5 cm., or if the outlet is so contracted that the combined intertuberos and posterior sagittal diameters are less than 15 cm. The pelvic cavity may be so obstructed by tumours that vaginal delivery is impossible or would involve serious damage to the child or mother. Mutilating operations on a dead fetus permit extraction through a less spacious pelvis but the shortest true conjugate permitting even such operations is said to be 6 cm. Under such conditions there is no alternative treatment; Cæsarean section must be chosen and should be performed before labour or as soon after its onset as possible. Some prefer the classical operation (Sanger) and others use the lower segment technique in the belief that peritonitis will be less likely to follow and that post-operative distress will be reduced. Required operations for pelvic tumours can be easily carried out with little extra risk.

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The ease of coming to a conclusion as to the proper treatment of these severely contracted cases is in marked contrast to the difficulty in choosing the most prudent mode of delivery for patients in whom the degree of pelvic contraction is comparatively slight. In this border-line group are usually placed pelvises with a true conjugate of 9 cm. and up, unless, as in the android type, some other barrier is present in the cavity or at the outlet. It is said that 75 per cent of the cases in this border-line class can be delivered spontaneously or with slight operative aid, while the other 25 per cent require abdominal delivery. If all the forces of expulsion and resistance were measurable, a more scientific forecast of the course of labour would be possible, but who can predict the probable strength or weakness of the uterine contractions, the exact diameters or mouldability of the fetal head or the endurance of the patient? Undoubtedly a test of labour should be given until events of early labour suggest a wiser course. Signs that vaginal delivery may be reasonably expected include engagement, increased flexion, descent or rotation. Unfavourable signs are excessive overlapping of the fetal head at the inlet, deflexions, non-descent, early rupture of the membranes, poor dilatation and prolapse of the fetal cord.

Were time of no importance our problem would be simpler, but it is an established fact that infection of the uterus and its contents is more probable as the cervix becomes dilated, and especially after rupture of the membranes; therefore the longer the duration of labour before doing Cæsarean section, the greater the danger of peritonitis; also the mother's general condition is bound to be impaired by a long labour and the danger to the babe is proportionately increased.

Since the danger of peritonitis is increased when Cæsarean section is done after labour has been in progress, the classical Cæsarean should be abandoned in such cases in favour of the lower segment technique. Should, however, there be evidence of frank infection, Cæsarean hysterectomy or the Latzko extra-peritoneal approach would be the methods of choice. Though I have had no personal experience with extra-peritoneal operations, the Latzko operation appears to be gaining favour among American operators.

No general formula in terms of time, frequency or strength of pains has found general

acceptance. These cases cannot be treated as a class. Each must be decided by the particular circumstances present. Speaking from memory only, I think perhaps in my own cases the tests of labour have averaged from twelve to twenty-four hours if the membranes have not been ruptured over a few hours.

Vaginal deliveries.—That vaginal delivery is indicated when it offers a reasonable promise of safety to mother and child is evident when one compares its maternal mortality with that of Cæsarean section, but that this general principle is not infrequently violated is well known to all. Conversely, to ignore the danger signals against vaginal delivery is little less excusable, especially when previous confinements have resulted in difficult vaginal deliveries, with children born dead or with hopeless birth injuries, to say nothing of the avoidable traumatism suffered by the mother.

To detail the manœuvres that may be required in difficult cases of vaginal delivery is beyond the scope of this paper except in so far as they may be caused or affected by disproportion. As disproportion is often the primary or contributory cause of malposition, malpresentation, faulty attitude, early rupture of the membranes, prolapse of the cord, uterine inertia, tetanic contraction and contraction ring, its presence should always be suspected under such circumstances and adequate examinations or re-examinations made before planning the mode of delivery.

Again disproportion adds materially to the difficulty and dangers of vaginal operations. The usual simple outlet forceps operation may be absolutely contraindicated in the android or funnel-shaped pelvis. Rotation of an occipito-posterior is contraindicated in the anthropoid type of pelvis. Difficult forceps extraction indicates faulty judgment in the management of disproportion. In as much as the head ill fits the lower zone and cervix of the uterus, cervical effacement and dilatation are slower. The extra time required for the satisfactory completion of these processes is not infrequently extended by uterine inertia and must be allowed for. These labours tend to be long and tedious but they cannot be hurried. Time must be granted to permit the cervix to dilate and the greatest diameter of the fetal skull to pass the inlet before forceps are applied. The modern development of obstetrical analgesia permits us to do this much more humanely than was possible a

few years ago. Pituitrin has no place in the treatment of such cases as it may easily cause intra-uterine asphyxia of the fetus or tetanic contraction and rupture of the uterus. High forceps delivery may sometimes be unavoidable though its results are devastating to both mother and child. If the child dies *in utero* the delivery may be simplified by embryotomy.

The risk to the fetus in cases of disproportion is not lessened by version and breech extraction, and it is all important to remember this when contemplating its use in dealing with a floating head or in cases of shoulder, face or brow presentation. If the lower segment is unduly stretched or the uterus in a state of tetanic contraction the risk of rupturing the uterus will exclude the employment of version and breech extraction. Having had no personal experience with pubiotomy I can only say that from a purely academic viewpoint I can easily conceive of its apparent value for an impacted mento-posterior or for a contracted outlet.

Our troubles have not entirely disappeared on the completion of the second stage. Uterine atony may prolong the third stage or cause smart post-partum hæmorrhage. Pituitrin on the completion of the second stage followed by ergometrine after the placenta has been expelled, is worthwhile. Throughout labour general systemic treatment including intravenous glucose, as indicated, may be required. Following the more serious operative deliveries the use of sulfanilamide as a prophylactic against sepsis appears rational.

In order to demonstrate the risks of disproportion and to consider more graphically the

alternative methods of treatment a few Tables are here given.

TABLE I.

STATISTICS FROM TWO SERIES OF CASES DELIVERED AT
ST. MICHAEL'S HOSPITAL

Extracts from an analysis of 5,829 consecutive labours
Percentage

(A) Maternal mortality	0.41
(B) Fetal mortality	5.10
(C) Cæsarean section incidence (performed for any reason)	1.9

TABLE II.

EXTRACTS FROM ANALYSIS OF SERIES OF 1,000 CASES

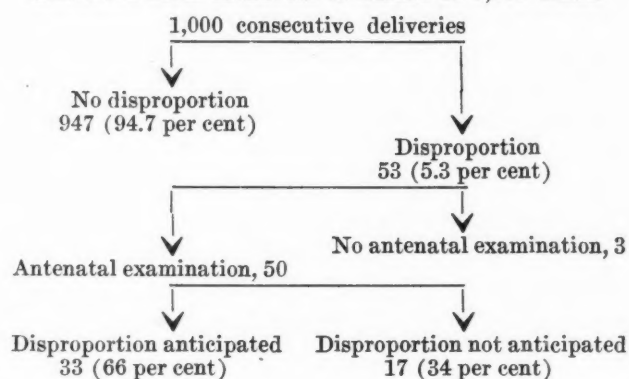


TABLE III.

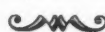
EXTRACTS FROM AN ANALYSIS OF 53 CASES OF DISPROPORTION
COMPLICATING 1,000 CONSECUTIVE DELIVERIES

(A) Maternal deaths	2
(3.7 per cent of disproportion cases)	
(One due to staphylococcus septicæmia)	
(One due to peritonitis)	
(B) Fetal deaths (asphyxia)	3
(5.68 per cent disproportion cases)	
(C) Cæsarean sections—before labour	4
After onset of labour	4
	percentage
Incidence in total series.....	0.8
Incidence in disproportion cases.....	15.1

TABLE IV.

METHODS OF TREATMENT IN THE 53 CASES OF DISPROPORTION

53 cases				
Cæsarean section, 4 (before labour)			Test of labour, 49	
			↓	
Spontaneous delivery, 9	Forceps delivery, 33	Version and breech extraction, 2	Cæsarean section, 4 (all lower segment)	Craniotomy, 1 (on dead child)
	low, 16	medium, 16	high, 1	



THE PRESENT STATUS OF THE THYMUS GLAND IN
PÆDIATRIC PRACTICE*

BY E. A. MORGAN

Toronto

THERE is probably no organ of the human body which is so enshrouded in mystery as the thymus gland. Its anatomical relationships and its histological structure are well known but we know little about its physiological function and its pathology. This ignorance is reflected in the frequency with which it is cited as the etiological agent in a wide variety of diseases. It is commonly believed to be a cause of sudden death, particularly in infancy, and is still frequently employed as an alibi for an untimely or carelessly given anæsthetic. It is its relationship only to certain clinical manifestations in infancy and childhood which I intend to discuss in this paper.

Ever since the recognition of the gland as an anatomical entity in the first and second century the pendulum of medical thought concerning its importance in the body has swung backward and forward, and never has there been any unanimity of opinion. The functions attributed to it in the 16th, 17th and early part of the 18th century were many, varied, and fanciful. Reports of sudden death due to enlargement of the thymus appeared in the literature as early as 1614, and there were many more in the 18th century. The end of the 18th and beginning of the 19th centuries produced many descriptions of thymic asthma due to pressure of an enlarged gland, and, in Germany particularly, numerous thymectomies were performed with reported benefit. Paltauf's description^{1, 2} in 1889-1890 of the condition, which he termed "status thymico-lymphaticus" was the first important contribution to the subject. Next came the era in which experimental proof was adduced that the thymus was a ductless gland with an internal secretion, only to be squashed by equally convincing proof to the contrary. In the last twenty years the controversy has been focussed on the culpability of the gland for the occurrence of sudden fatalities and on its physi-

ological function from an endocrinological point of view.

In order to arrive at a satisfactory conclusion regarding the importance of the thymus it is necessary to answer three main questions. (1) Is there such a pathological entity as status lymphaticus? (2) Does the thymus liberate an internal secretion, and, if so, what is its significance in relation to sudden unexplained deaths in childhood? (3) Is there any real proof that an enlarged gland can produce symptoms by the application of some mechanical force such as pressure or traction?

Status thymico-lymphaticus.—Since Paltauf's original description of this syndrome the only important corroboration has been contributed by Symmers,³ whose careful work on a large number of autopsies conducted in the Children's Department of Bellevue Hospital deserves consideration.

The important features of the syndrome as described by him were "Certain peculiarities of the body configuration, persistence of the thymus, hyperplasia of lymphoid tissue in the spleen, intestines, and elsewhere, hypoplasia of the vascular system and developmental deficiencies in the genitalia. These anatomical anomalies are attended by instability of all the lymphoid tissue, providing a mechanism which, when set in motion, is capable of so sensitizing the body as to produce anaphylactic phenomena of varying intensity." He also advanced an interesting theory to explain the anaphylactic shock which he believed to be responsible for the sudden fatalities. This theory was, in brief, that symptoms were produced by the sudden release into the system of a nucleo-proteid formed as a result of destruction of innumerable germinal follicles in lymph glands throughout the body.

It is important to note, however, that no other confirmation of this theory has been recently published. The diagnosis of status lymphaticus as a clinical or pathological entity has rapidly fallen into disfavour. In the Hospital for Sick Children such a diagnosis has been made only five times in the last fifteen

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years, and an analysis of the case histories reveals that there was little justification for such a diagnosis. In three instances no autopsy was performed; and the other two were children who were apparently overwhelmed by a severe toxæmia associated with convulsions and a high temperature, and at autopsy no cause was found sufficient to explain death. The thymuses weighed respectively 29 and 39 g. and in both instances there was general glandular enlargement. The conclusion of the Status Lymphaticus Investigation Committee in Great Britain, after an analysis of collected data, was that there was no such pathological entity. In their material there was, curiously enough, no instance of sudden unexplained death in infancy. I am convinced that the confusion which exists concerning status lymphaticus has been caused by the misguided effort to combine several distinct pathological conditions such as lymphadenosis, hypogenitalism, etc., into one syndrome.

Physiological function.—The literature dealing with the possible functions of the thymus gland is so voluminous that it would be impracticable to cover it here. Suffice it to say that in the last six years enough experimental proof has been advanced, mainly by Rowntree and his co-workers,⁵⁻⁸ to permit the conclusion that the gland is a definite link in the endocrine system. Thymectomy in animals has been shown to produce genital hypoplasia, enlargement of the adrenal cortex, compensatory hypertrophy of the thyroid and retardation of growth in successive generations. X-ray therapy of the thymus in rats has been followed by retardation in development of the gonads. Administration of thymus extract produces in the young of successive generations of rats acceleration of growth and of adolescence, and an increase of fertility rate. Excision of the adrenals in rabbits not only prevents thymic involution but causes hyperplasia of the involuted thymus. Castration in male rabbits is followed by hypertrophy of the thymus, and this same phenomenon has been observed in eunuchs. Actual demonstration or isolation of an internal secretion from the gland has, however, not been forthcoming. Even if it were, it could hardly explain the rapidity with which death occurs in apparently normal infants. There is no parallel for such a phenomenon in the realms of endocrinology.

The relation of an enlarged thymus to sudden death.—The second decade of this century experienced an acute revival of interest in the thymus gland. This was the result of a series of publications which endeavoured to associate the enlarged gland with a certain clinical syndrome which comprised such symptoms as brassy cough, noisy breathing, cyanosis, choking attacks, syncope, and even sudden death. One such publication emanated from the Hospital for Sick Children in 1927, and I was co-author with Dr. Alan Brown and Dr. Rolph. It is interesting, now, to review the events that prompted the paper, the clinical observations on which our conclusions were based, and the gradually increasing realization during the following ten years that many of our cherished convictions were untenable.

In the three or four years before the publication a succession of sudden unexplained deaths of young infants had occurred in this city. A review of the case histories revealed that many of them had had for some months before death certain unexplained and, at times, alarming symptoms. The demonstration at autopsy of an enlarged thymus suggested an etiological relationship. For some years, then, all infants exhibiting these symptoms were given x-ray therapy over the region of the thymus, and the apparent success of this treatment increased the conviction that the enlarged gland was the causative factor. Doubt of the truth of this conviction was a gradual development during the next eight or ten years, and was fostered by several occurrences. Not all the children with suspicious symptoms were relieved by x-ray therapy; many infants with large thymic shadows were symptom-free; and not all those with suggestive signs had demonstrable enlargement. What was even more disturbing was the demonstration that other pathological conditions, notably tetany of the new-born and allergic shock, could produce identical symptoms. Medical thought is still confused but in the last few years the trend has been toward the absolution of the thymus from all blame.

An impartial analysis of the arguments pro and con, as set down below, are enlightening:

A. Observations which favour the theory that the thymus is the causative agent.

1. The firm belief, still held by many clinicians that certain suspicious symptoms in infancy are relieved by irradiation of the thymus.

2. The fact that diminution of the thymic shadow is coincident with this clinical improvement.

3. The reports in the German literature that signs of tracheal pressure have been relieved by thymectomy or thymopexy. It should be stressed, however, that sufficient care was not used to eliminate the possibility of the enlargement of the gland being due to lymphosarcomatosis.

4. The frequently quoted statement of Chevalier Jackson¹³ that compression of the trachea due to a large thymus has been demonstrated by him by bronchoscopic examination. His references to this condition are however casual and vague, giving no figures as to the number of cases observed or any information regarding their ultimate disposition.

5. Accredited experimental evidence that the thymus is linked with other ductless glands, and even, possibly, possesses an internal secretion. That an increase or diminution of such secretion could be the cause of symptoms is however purely conjectural.

B. Arguments tending to disprove the theory.

1. Actual proof that enlargement of the thymus can of itself produce symptoms has never been advanced at any time.

2. There is very considerable evidence that the weight of an enlarged thymus gland is insufficient to produce tracheal compression. Taumassia has shown experimentally that this would require a weight of 180 g. Simple hypertrophy rarely if ever produces this weight. Excepting Chevalier Jackson's observations, there has been no radiological or bronchoscopic confirmation of tracheal compression.

3. There has been, in the past, much misunderstanding as to what constitutes an enlargement of the gland. Different observers report that from 30 to 55 per cent of normal new-born infants have x-ray enlargement. Many statistics designed to show the weight of the thymus at various ages have been based on autopsies performed on subjects who have died after prolonged illness. Under this condition the gland is known to decrease rapidly in size.

4. Many children with suspicious symptoms have normal thymi and vice versa. Many large glands occur in normal symptom-free children.

5. The recognition of tetany of the new-born as a clinical entity has introduced a new etiological factor. Low blood calcium has been

proved to be the cause of many of the symptoms formerly attributed to the thymus gland. It is interesting to record in this connection the experimental findings of three observers. Mettenleiter¹⁷ proved that x-raying the thymus caused better utilization of calcium in the body. Eicholz¹⁵ showed that x-ray treatment of any part of the body surface caused elevation of the serum calcium; and Nesbitt¹⁶ described 13 instances of elevation of serum and spinal fluid calcium following x-ray therapy in children with symptoms suggestive of thymic dysfunction. His treatments were not given over the region of the thymus but they *were* followed by cessation of symptoms. It is more than likely that we have in the past been relieving by our x-ray treatment mild cases of tetany of the new-born.

6. Many suspicious symptoms such as noisy nasal breathing, cough, choking attacks and syncope can be satisfactorily explained on an allergic basis. I have, personally, seen a number of infants exhibiting symptoms of all degrees of severity, and have been able to prove to my own satisfaction that the causative factor was sensitization to some foreign protein such as animal fur, feathers, etc. Fifteen years ago I would have, for lack of a better diagnosis, classed them all as thymic disturbances. It is interesting to note that Symmers, in his treatise on status lymphaticus emphasized the allergic manifestations and pointed to the danger of sudden death from allergic shock. Waldbott¹⁸⁻²¹ in a series of publications in this connection draws attention to several significant facts. (a) The thymus and other lymphatic glands in the body are almost invariably enlarged in the allergic child. This has been described also by Tumpeer. (b) In sudden death due to allergic shock, such as occasionally follows injection of horse-serum, the pathological and histological pictures of the organs are identical with that described in so-called thymic death. (c) A family history of allergy is found very frequently in infants exhibiting suspicious thymic symptoms. This observation I can confirm from many observations of my own. It is interesting to recall that in our original paper on this subject in 1927 we drew attention to the fact that 22 per cent of the patients were suffering from eczema. (d) Waldbott reported, also, five proved instances of allergy to anaesthetics such as ether, novocaine, etc. Here then is an adequate explanation for the rare anaesthetic fatality where other factors such as

aspiration of stomach contents or mucus have been excluded.

7. Other well recognized causative factors in the production of cyanosis of the new-born and even of sudden death in infants are often ignored or minimized, in an effort to forestall misdirected criticism of the obstetrician or the infant's parent or nurse. Aspiration of mucus, with or without demonstrable atelectasis, is undoubtedly the most frequent cause of cyanosis of the new-born, and suffocation due to inhalation of vomitus or overlying by the mother during sleep is a not infrequent cause of death in normal infants.

8. The etiological relationship between the thymus gland and holding-breath spasms is very questionable. A much more logical explanation of the phenomenon would be that vigorous crying washes the CO₂ out of the blood, producing a period of apnoea and unconsciousness.

A critical review of the above arguments pro and con reveals that the case for the thymus rests on very scanty evidence, and that the most convincing argument against the gland rests in the fact that most of the suspicious symptoms can be much more logically and scientifically explained by other known pathological processes. There are still some symptoms for which there is no adequate explanation. We

all encounter, for example, the two-year old child who, following a slight injury, becomes blue and unconscious, and who remains in a state of semi-stupor for several minutes. This type of attack is not helped by x-ray therapy, and I believe there is no relation between it and the thymus. So long, however, as the medical profession persists in attributing this symptom, and similar ones, to some fanciful dysfunction of the gland, so long will scientific investigation and clinical observation be hampered in their efforts to discover the true cause and the proper remedy.

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THE COMPARATIVE VALUE OF VARIOUS TUBERCULIN TESTS IN CHILDREN, MEDICAL STUDENTS, AND NURSES-IN-TRAINING*

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UNTIL quite recently a positive tuberculin reaction in the adult was considered to be almost universal, and, therefore, of little clinical significance. For some years, however, pædiatrics have received much help from the application of this test, first of all in infancy and latterly in the older child and adolescent.

That the incidence of tuberculosis is becoming less in enlightened communities is an established fact. That many persons attain adult life without having become infected by the tubercle bacillus is also well known. In many districts this reduction in infection probably has resulted from intensification of our campaign against

tuberculosis and improved living conditions. Table I demonstrates the results that have been obtained amongst school children at the Royal Edward Institute. The same supervision and, to a large extent, the same group of nurses have

TABLE I.

ROYAL EDWARD INSTITUTE CONTACT CLINIC FOR CHILDREN				
Year	Number given Mantoux tests	Positive reactions	Positive percentage	Number of consultations
1933	726	415	57.0	2,178
1934	706	351	49.5	3,147
1935	738	316	42.8	2,854
1936	732	316	43.1	2,700
1937	556	185	33.3	2,284
1938	678	232	34.2	2,089
1939	808	270	33.4	2,588
Totals	4,944	2,085		17,840

* Presented at the Annual Meeting, Canadian Tuberculosis Association, Montreal, June, 1940.

been responsible for the attendance at this clinic. Therefore, it can be reasonably assumed that there has been a definite reduction in the percentage number of infected children.

TABLE II.

ROYAL VICTORIA HOSPITAL CLASS 1936-1939.

Number of students admitted	72
Old tuberculin positive on admission (none sick with tuberculosis during training).....	18
“ “ negative on admission	51
“ “ refused on admission	3
“ “ positive on graduation	58
“ “ negative on graduation	16
“ “ positive on admission—clinical cases..	0
“ “ negative on admission—clinical cases.	6

Clinical cases

Case	Time lost
M.G.	13 months
C.M.	21 “
M.A.	12 “
F.L.	9 “
Average	13¾ “
I.M.	discontinued training
H.B.	“ “

TABLE III.

ROYAL VICTORIA HOSPITAL CLASS 1937-1940

Number of students admitted	72
Old tuberculin positive on admission (none sick with tuberculosis during training).....	18
“ “ negative on admission	54
“ “ refused on admission	0
“ “ positive on graduation	56
“ “ negative on graduation	14
“ “ positive on admission—clinical cases..	0
“ “ negative on admission—clinical cases.	4
Discontinued training (not illness)	2

Clinical cases

Case	Time lost
E.M.	19 months
J.C.	15 “
V.G.	20 “
J.H.	8 “
Average	15½ “

Tables II and III exemplify the great number of tuberculin-negative undergraduate nurses on entering our training school. These tests were performed with 1/10 mg. and 1 mg. of old tuberculin on all new pupils, and repeated on the negative reactors every six months. In these two classes which were followed for the three years of their undergraduate course tuberculin tests and x-raying of the chest were carried out every six months. Recently, the custom has been changed, and a check-up is made on all tuberculin-negative nurses every three months. The number of negatives on graduation closely approximates the number positive on admission. Also, every case of tuberculosis that required treatment occurred in the group that was negative on admission to the nursing school. In

other words, all these nurses probably suffered from some form of primary infection, which, in my opinion, might have been avoided had they been rendered tuberculin-positive by the injection of BCG.

A somewhat comparable figure was obtained by Dr. F. G. Pedley with the medical students at McGill University. Dr. Pedley's study is not far advanced, but in the first year group he found 38.1 per cent positive and in the second year 43.2 per cent. Presumably by the time these two groups have become hospital interns the number of positives will have markedly increased, and 4 or 5 per cent of casualties will have occurred.

Being local institutions, the Royal Victoria Hospital, the Royal Edward Institute, and McGill University statistics have been utilized—but the same trend will be found in any enlightened community. The tuberculin test, therefore, becomes of importance to every physician or nurse interested in tuberculosis.

In childhood, as a rule, allergy is well marked, and some inconvenience attends a test by means of a needle. Therefore, inunction or patch tests have a definite application as a case-finding measure. The number of positive reactions produced by these two methods is practically identical.

The percutaneous or inunction test.—In 1907 Moro and Dagenough first described the inunction method for the diagnosis of tuberculosis. This ointment consisted of old tuberculin in a basis of anhydrous wool fat. In 1919 Hamburger introduced a so-called percutan ointment. In 1938 we studied intensely a small group of cases. Our patients ranged in age from 23 months to 13 years. All children in this group reacted positively to the intradermal injection of 1/10 mg. (1/10 c.c. of 1 in 1,000 solution) of old tuberculin. There were variations in their response to the injection of weaker solutions of old tuberculin, but the percutaneous test in our group was just as reliable as one test intradermally with 1/10 mg. (1/10 of 1 in 1,000 solution of old tuberculin).¹

Subsequent work in a group of tuberculous children at the Jeffrey Burland School confirmed these results.

There are some who prefer the percutaneous method because they maintain a plaster can easily be removed. But, generally speaking, it is agreed that the percutaneous, the Pirquet and patch tests yield comparable results.

In adolescence or adult life there is no objection to the intradermal method and, therefore, in these cases it should always be employed. The method of carrying out the tests is of some importance, that is to say, that it should be intradermal and not subcutaneous. In scientific work P.P.D. is to be preferred but in ordinary clinical use old tuberculin yields satisfactory results. The initial dose should never be more than 1/10 mg., as Edith Lincoln has emphasized the potential dangers from intensive reactions, and there is now therefore, a tendency to make the first dose 1/100 mg. If the first dose yields negative results after 48 hours, a larger one should be employed, and the American National Tuberculosis Association recommends the following graded dosage: (1) 1/10 mg., (2) 1 mg., (3) 10 mg. Even in the presence of fever anergy cannot result with a

dose of this size and it can be stated with confidence that with such a routine 99.5 per cent of cases of tuberculosis will give positive reactions. The question of the age of the old tuberculin is of some importance and usually fresh solutions are prepared every six weeks, although in my experience 1 in 1,000 solution kept in refrigeration and in the dark has remained potent for two years.

This contribution is made to emphasize the lessened incidence of primary infection in childhood and the consequent rather common first infection in young adults whose way of life necessitates proximity to the case with positive sputum—which means the increasing importance of tuberculin tests in all groups.

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DRAINAGE OF TUBERCULOUS CAVITIES BY ASPIRATION (MONALDI METHOD)*

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YOU will presumably be interested to hear about that new method of drainage which I have already applied in nine cases of select pulmonary tuberculosis cavities, three of which date back to May, 1939.

It was probably during the summer of 1938, after hours of discussion, study, and hesitation that Monaldi first undertook this therapy as an ultimate measure following the failure of all other known methods of treatment. The results were so gratifying and the disadvantages so few that it was decided to apply it immediately to as many as 50 patients; reports add that there was but one death, which, apparently, may have been due to surgical intervention, though, actually, the real cause remains unexplained.

To the name of Monaldi, a member of the Italian school so productive in pulmonary therapy and physiology, were soon added those of my Swiss professors and renowned phthisiologists, Moria, Cardis, Michetti, Jeanneret, Rossel, Burnand, Franken, and our comrade Chadourne, of France, who, beyond the Italian

boundaries, were the first to adopt the method which Mayer, of New York, qualified as the "most ambitious approach to new methods". As a matter of fact, in spite of the method's denial of all existing theories its efficacy asserts itself.

Its technique is rather simple. Following a tomography or, preferably, a seriescopy, an outline of the fluoroscopic image of the cavity is drawn on the skin; under local anaesthesia and through a trocar a permanent catheter is introduced at the level of a costal interspace into the cavity itself, the opposite end of the catheter being connected to a continued suction apparatus.

What happens? The intracavitary air pressure being constantly under negative pressure, the walls of the cavity are somewhat less responsive to the force of expansion of the inspiratory action, which force of expansion, as we know, has a tendency, at each respiratory movement to enlarge the cavity, whereas the expiratory phase, due to the action of the elastic fibres, favours a diminishing of volume and the closure of the cavity. If the force of aspiration through the catheter rises above that of Nature (usually termed drainage bronchus)

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a part of the secretion from the geode will drain through this new channel, then more and more of the secretion will follow until such time when the internal drainage fistula will gradually shrink till disappearance. Even the catheter will be gradually expelled, similar to gauze in an abscess that heals by drainage.

Reports mention cavities which have gradually and completely disappeared (some authors say "cured") after a few months' treatment—and, why not? A series of x-ray films show the disappearance of all radiological signs of an orange-sized geode (cavity) within six days. We should not deny that there was a cavity, as such naïve denial ignores or chooses to ignore the numberless autopsies performed by notable anatomists throughout the world, and the accumulated proofs evidenced by collapse therapy and series of films. The new drainage method adds further evidence of these cavities shown by radiological films, and which are usually interpreted as such.

The patient's rapid disintoxication raised great interest among phthisiologists. The elimination of waste following the procedure annuls the resorption of toxins, improves the digestive system and the patient's general condition. Even during the first days there is a decrease of half or more of the coughing spells, and a sensation of general well-being is experienced by the patient and in the diseased lung. Evidently, one cannot speak of cure after one, two, or six weeks, but at this time the cavity has been seen to retract to three-quarters, two-thirds, or half of its former size, and sometimes it has been seen to disappear. Such encouraging results prompt us to continue the treatment, or take advantage of the patient's improved general condition to undertake thoracoplasty, if warranted.

We have already briefly mentioned two of the drainage theory's main points, and before going further into the matter it would be appropriate to study the process of a pulmonary cavity's formation, maintenance, and development. As in asthma, all cavities have not an identical etiology, and are not influenced by like factors; unfortunately, the study of such a transformation would unduly lengthen this paper, but we may mention that a cavity is due to the elimination by a more or less extensive focus of the necrosed tissue caused by bacilli and their toxins. Once localized, the geode may either recede or increase in size under the

action of the predominating physio-pathological conditions. Some cavities progress under the constant invasion of their wall-layers, whereas others result from the pressure of gas causing the peripheral alveoli to collapse. However, this somewhat atelectasized tissue stores up the elastic tension which Nature will later utilize when the abnormal hypertension disappears through return of an open ventilation.

One can easily conceive how such torn anfractuous tissue, thick secretions, and débris may form, at the meatus of what is called the bronchus (but would be more appropriately named the "drainage fistula"), a reversed and unique safety-valve "bronchus-cavity", as seen in cases of pleuro-pulmonary perforation. A mere deep inspiration, and particularly the hectic coughing spells introduce under progressive pressure a certain quantity of air or gas into the cavity. One understands also that the drainage fistula is at times more or less permeated by air, and clogged either by a simple or spasmodic stenosis, or a sort of thrombosis resulting from the adhering secretions which slowly progress through its lumen, producing a more or less transitory gas stasis under pressure in the upper part of the system. This may explain the shadow cavities which appear and disappear under x-rays, and have been such a source of concern to phthisiologists. By using a permanent catheter it has been Monaldi's hope to shield the geode from such physical conditions, which hinder its contraction and cure.

The direct elimination of the harmful products prevents mucous irritation of the bronchi, trachea, larynx, pharynx and mouth; it facilitates and prompts evacuation; simplifies cleansing of the cavity; favours a higher vascularization and a normal tissue nutrition and, consequently, a regain of energetic vitality. We all know that a soiled wound is already improved when freed of foreign bodies and slough. Then, the almost constant gas depression, actuated by a continuous aspiration calls for the re-expansion of the either atelectatic pericavitary tissue, which has already been referred to, or the oedematous inflammatory substances. The evacuation of secretions through this new channel produces at the same time, by way of a stenosis, a closing of the intra-pulmonary parenchymous drainage fistula.

According to our own experience, the disadvantages of this method are of minor impor-

tance. Introducing the catheter causes little or no pain to the patient; a local infection usually ensues along the path of the catheter, but it is slight. A dry aseptic dressing is maintained around the catheter's exit. These disadvantages are outbalanced by a rapid decrease of the coughing spells and a feeling of general well-being experienced by the patient. The catheter must also be changed at times, but this involves very little difficulty.

This technique can be adopted in cases of purulent pleurisy, which we have thus attacked successfully. The method also enables us to foresee further ventures. Thus, prior to introducing the catheter there is a possibility of inserting an optical apparatus to explore the condition of the cavity, cauterize the meatus of a draining fistula, or remove a sample of tissue for the histologist or the bacteriologist.

I recall a case when the catheter was introduced into one of the tubes, causing an irritation of the trachea at or near its bifurcation. This was followed by a most peculiar coughing spell which attracted the attention of all the attendants. This I duplicated under fluoroscopy by slightly pressing forward and drawing back the catheter, which caused and then stopped the spasmodic defense coughing spell.

A fellow-worker in Switzerland, who has attended ten similar cases within a year, states that his results are most gratifying, but he adds we must not say they are marvellous. I concur in this opinion, but wonder if this manoeuvre could not be an adjunct in the preparation of patients for thoracoplasty in lessening the intoxication and improving the general condition.

Despite Monaldi's pupils' enthusiasm, this method is no panacea for all cavitation cases. Too many methods, replete with promises, have deceived the phthisiologists, not to warrant caution, prudence and, above all, objectivity. I do not wish to pose as a fearless advocate of a new method, nor to undertake a controversy, but I have satisfied myself that a ray of hope has now developed in the treatment of select cases of pulmonary tuberculosis which, heretofore, had found us defenceless.

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SULFANILAMIDE AND SULFAPYRIDINE IN THE TREATMENT OF ACUTE LARYNGO-TRACHEO-BRONCHITIS*

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MY intentions in writing this paper are twofold. I wish, first of all, to bring before medical practitioners my results in the medical treatment of a highly fatal disease. Secondly, I wish to bring to the attention of medical practitioners a disease of young childhood which has been to a great extent, until recent years, ignored by medical textbook authors and medical teachers. Of the scant literature on the subject, fully 90 per cent has been from otolaryngological sources.

For many years this condition was frequently confused with laryngeal diphtheria which it closely resembles in the obstructive stage. Today, with laryngeal diphtheria an almost extinct disease, little difficulty in the differential diagnosis is encountered. Acute laryngo-tracheo-

bronchitis is a vivid descriptive name for the disease. Synonyms are "streptococcal croup" and "obstructive streptococcal croup".

The condition is a disease of young childhood, 90 per cent of all cases occurring between the ages of 6 months and 3 years, and the symptomatology is strikingly uniform.

The infecting organism in the great majority of cases is streptococcus; Jackson¹ states, "In from 3.5 per cent of cases the influenza bacillus seems to be causative, occasionally other organisms seem responsible, but over 90 per cent of the cases are primarily or secondarily streptococcic." In a later article Jackson² gives an estimate of 85 per cent of all cases as being streptococcic in origin.

Faber believes the infection is a descending one from the pharynx, descending by way of the lymphatics and interstitial tissues. He believed that organisms other than streptococci were oc-

* Read at the Seventy-first Annual Meeting of the Canadian Medical Association, Section of Pediatrics, Toronto, Friday, June 21, 1940.

asionally found; staphylococci, pneumococci and influenza bacilli were secondary invaders.

Font, Oretz and Cashion,⁴ of San Juan, Puerto Rico, report the consistent absence of diphtheria in the cultures from the throats of these cases, and report the use of sulfanilamide in the treatment of one case where streptococci had been found in the throat without any apparent improvement. In 80 per cent of our cases streptococci were cultured from the throat or from coughed-up secretions. One rapidly fatal case yielded at autopsy pure cultures of *Staph. aureus* from the larynx and bronchial tree.

Little has been accomplished for these cases previous to their becoming obstructive emergencies, most of them being considered cases of simple croup until signs of persistent obstruction occurred. There is a period in most cases between the time when persistent obstructive symptoms appear and relief is necessitated by tracheotomy. It is in this period that results may be obtained with the use of sulfanilamide or sulfapyridine. To make this possible prompt diagnosis of the condition must be made by the practitioner observing the case and adequate treatment given. The symptoms are so uniform and outstanding that diagnosis presents little difficulty. Let us briefly consider them.

The condition usually begins as a simple upper respiratory infection or what appears to be an attack of simple croup. The great majority of our cases presented symptoms of croup early in the condition, with croupy cough and moderate elevation of temperature. At this stage the parents may not consider the child sufficiently ill to call a physician. In from 6 to 24 hours the disease shows itself in a more serious phase, with laryngeal and obstructive symptoms as outstanding features. The breathing becomes rapid and laboured. The temperature mounts to 102 to 105° F. A persistent croupy metallic cough is heard at frequent intervals; when the child cries or speaks the voice is hoarse and slightly muted.

On inspiration a stridor is heard and often a wheezing sound on expiration. There is both supra- and sub-sternal retraction on each inspiration. In the early stages of the obstructive symptoms the colour of the child may be good, but as the disease advances a slight degree of cyanosis appears, and the child assumes a tired and toxic grey look. He either lies in a toxic stupor or tosses about in extreme restlessness. At no time is the cyanosis deep. Unless the con-

dition is relieved at this stage the cough reflex finally becomes benumbed or absent, and the patient sinks into a relaxed state, as if from excessive fatigue. The child appears profoundly toxic, the temperature mounts, and death from rapidly failing circulation ensues.

On examination the throat is usually found to be inflamed, but rarely shows intense involvement.

Little can be heard in the chest on auscultation except the loud inspiratory stridor and the expiratory wheeze. The x-ray picture is usually negative.

Of the bronchoscopic picture Brennerman⁵ gives a vivid and clear description. Let me quote him in part.

"The bronchoscopic picture of the disease is characterized by changes throughout the entire respiratory tract. These changes consist of intense inflammation of the mucosal lining, with thickening of the membrane and resulting obstruction of the airway in the larynx and in the smaller bronchi; associated with this is the formation of large quantities of thick tenacious secretions equally distributed throughout the tracheo-bronchial tree. These secretions add to the obstructive symptoms, frequently becoming dry, coagulated and crust-like, adhering to the mucosa. They obstruct the laryngeal airway and even the lumen of the bronchi. Occasionally there is a marked supraglottic obstruction caused by an oedematous thickening of the epiglottis of the aryepiglottic folds and of the false cords. It is this boggy inflammatory oedema that would make intubation futile should operative intervention become necessary, because the obstruction would be above the tube."

Faber described the pathological condition as being a diffuse acute cellular infiltration with destruction of the walls of the larynx, trachea and bronchi, a condition akin to streptococcal cellulitis of the skin with the formation of tenacious fibrinous and fibrinopurulent exudate.

Coincident with the establishment of the definite clinical value of sulfanilamide in the treatment of streptococcal disorders, we began treating cases of acute laryngo-tracheo-bronchitis with the drug. In the past year four cases have been treated with sulfapyridine. All four recovered. The usual standard dosage was given. In our series we have not included cases with mild obstructive symptoms associated with croup. All have presented definite obstructive symptoms with persistent supra- and sub-sternal retraction on inspiration and a temperature range of 102 to 105° F.

CASE 1

David S., aged 16 months. Onset the day before admission to hospital with croup; in p.m. temp. 104° F. During the night the child developed difficulty in breathing and became extremely restless. He was brought to hospital at noon. Temperature on admission 104° F.; supra- and sub-sternal retraction of chest on inspira-

tion; cough croupy and incessant. Inspiratory stridor was heard throughout the room. The throat was slightly inflamed. Child was very restless. White blood cells 18,000. Urine, negative. Diagnosis: acute laryngo-tracheo-bronchitis; throat swab, streptococci.

Course and treatment.—Prontylin, gr. 5, was given every 6 hours. A blood transfusion of 150 c.c. of the father's blood was given. The child was placed in a croup tent. His condition remained unchanged for 24 hours, with a slight fall in temperature to 103° F. On the evening of the second day the child showed improvement; temperature 101°; breathing slightly better. Steady improvement followed, with hoarse voice and brassy cough for 10 days.

CASE 2

Baby G., aged 12 months. On the day before admission to hospital the child began to show signs of respiratory distress with a croupy cough and elevation of temperature. The cough became more severe and the child began to have difficulty in breathing during the night. Temperature 103° F. The child had persistent supra- and sub-sternal retraction of the chest for 6 hours before admission. White blood cells 12,800. Urine, negative. Throat swab gave streptococci and staphylococci.

Course and treatment.—Prontylin, gr. 3, was given every four hours. Blood transfusion of 120 c.c. of the father's blood was given. A croup tent was used. No change occurred in the child's condition for 24 hours, then gradual improvement and recovery, with croupy cough persisting for one week.

CASE 3

Roland C., aged 3 years. Two days before being sent to hospital he developed a cold with a hoarse croupy cough. The following day his breathing became wheezy and difficult and the family physician was called, who diagnosed croup. The temperature was moderately elevated. That evening the child seemed much worse and difficulty in breathing persisted throughout the night, with extreme restlessness, chest retraction on inspiration, and further elevation of temperature. By morning he looked tired and slightly cyanosed. The mother became alarmed, called the doctor again, who brought the child to hospital. Death took place in the admitting room. Autopsy refused. Throat swab was positive for streptococci.

CASE 4

Baby L., aged 6 months. Twenty-four hours before admission to hospital the child developed what appeared to be an attack of croup, with elevation of temperature and difficulty in breathing. The child was placed in a croup tent, and vomiting was provoked by an emetic, with little relief. The following day the baby was brought to hospital. Temperature was 103.4° F. Persistent sub-sternal, supra-sternal and supra-clavicular retraction of the chest were noted on inspiration, with a respiratory stridor. The child was slightly cyanosed, the throat slightly inflamed. X-ray of chest was negative; white blood cells 16,000. Urine, negative. Diagnosis: acute laryngo-tracheo-bronchitis.

Course and treatment.—Prontylin, gr. 2, was given every four hours; transfusion of 100 c.c. of blood was given; and the child was placed in a croup tent. Improvement after 24 hours, with recovery. Throat swab was negative.

CASE 5

Morris H., aged 15 months. The child was well until the evening before admission to hospital, when he commenced to cough at 9 p.m. At midnight breathing had become difficult and the child was restless and fretful. All night long the breathing was noisy and difficult, and the temperature was elevated. The parents became alarmed on the morning when the difficult breathing persisted and sent for their doctor, who sent the child to hospital. On admission his temperature was 105° F. Breathing—continuous inspiratory stridor with supra-

and sub-sternal retraction; the colour of the child's skin was an ashen grey with slight cyanosis. Throat slightly oedematous and much inflamed. Diagnosis: acute laryngo-tracheo-bronchitis.

Course and progress.—The child was given a blood transfusion of 140 c.c. Prontylin, gr. 3, was given every four hours and he was placed in a croup tent. White blood cells 15,600. Throat swab positive for streptococci. For 24 hours the child's condition remained very much the same with temperature falling to 101.2° F. in 24 hours. Many times it was debated during the first 24 hours, whether to employ tracheotomy or not. However, improvement appeared after 24 hours and an uneventful recovery ensued with persistent brassy cough for many days.

CASE 6

William W., aged 1 year. The child contracted what appeared to be an attack of simple croup. The condition did not show any improvement in 24 hours, and on the second day became much worse, with signs of difficult breathing, persistent cough, hoarse and croupy, and a sharp elevation of temperature. Toward the end of the second day following the onset inspiratory stridor appeared, with persistent sub- and supra-sternal retraction of the chest. The child was sent to hospital. On admission the temperature was 104°. He was slightly cyanosed, restless, and distressed. Diagnosis: acute laryngo-tracheo-bronchitis. Inspiratory stridor and expiratory wheeze heard on auscultation of the chest. Voice, slightly muted. Throat slightly inflamed. White blood cells 1,400.

Course and treatment.—Blood transfusion of 140 c.c. of blood was given. The child was placed in a croup tent. Prontylin, gr. 2, every three hours. Throat swabs were positive for streptococci and negative for diphtheria. The respiratory difficulty was slightly less in 24 hours. The temperature was 102° F. Colour slightly improved. Slow recovery in four days followed by persistent croupy cough for two weeks.

CASE 7

Henry H., aged 2 years, 3 months. The parents said that the child developed croup 24 hours before being admitted to hospital, with elevation of temperature and a hoarse voice. During the night following the onset the child had difficulty in breathing. The following day the condition became much worse, with temperature rising to 104° F. and persistent sub-sternal and supra-sternal chest retraction on inspiration. The child was brought to hospital.

Diagnosis.—Acute laryngo-tracheo-bronchitis; x-ray of the chest was negative. A throat swab was positive for streptococci. White blood cells 11,800. The throat was inflamed but not oedematous. The child was slightly cyanosed.

Course and treatment.—The child was placed in a croup tent. Blood transfusion of 160 c.c. of blood. Prontylin, gr. 3, was given every three hours. Improvement occurred in 24 hours, with uneventful recovery.

CASE 8

Grant A., aged 2½ years. Two days before admission to hospital the child developed a harsh cough with some elevation of temperature. The doctor was called. Croup was diagnosed, and treatment prescribed. The following day the child did not seem so well, was restless all day, and developed some persistent breathing difficulty. The parents, residing in the country, telephoned the doctor about the aggravation of the symptoms. He prescribed further treatment over the telephone. By evening the child had uninterrupted inspiratory stridor and sub-sternal retraction on inspiration. This persisted during the night, during which he had periods of sleep interrupted by periods of extreme restlessness. The mother said that the child was very feverish. By evening his colour became ashen grey, and the parents became alarmed and brought the child to hospital the following afternoon. The child had ceased to cough for several hours, and when admitted appeared

very toxic and extremely fatigued. Temperature 104.4° F. The parents refused tracheotomy, and the child died in two hours, with the temperature mounting steadily before death and with no apparent relief from the use of the oxygen tent. Autopsy was refused. The throat was cultured; negative for diphtheria, positive for streptococci.

CASE 9

Leo L., aged 16 months. In the late afternoon previous to admission to hospital the child became feverish and restless with a hoarse brassy cough and some difficulty in breathing. He was treated as a case of simple croup. After a restless night he became much worse, the difficulty in breathing increased, and he was brought to hospital.

On admission the child was restless and having difficulty in breathing; supra-sternal and sub-sternal retraction of the chest were present. An inspiratory stridor was heard. The voice was slightly muted. Temperature was 103° F. The throat was slightly inflamed. Diagnosis: acute laryngo-tracheo-bronchitis.

Course and treatment.—The child was placed in a croup tent; a blood transfusion of 140 c.c. was given; prontosil, gr. 3, was given every four hours. White blood cells 14,000. For twenty-four hours the child's condition remained unchanged, with fall of temperature to 101° F. and some relief in breathing. Recovery followed with a persistent brassy cough for several days. A swab from blood gave streptococci and pneumococci.

CASE 10

Arthur P., aged 6 months. Three days before admission to hospital child developed what appeared to be a simple cold with sniffing nose and tight cough. On the second day the breathing became harsh and croupy in character. That evening he began to have some difficulty in breathing, which persisted during the night. He was brought to hospital the next day. On admission the infant was slightly cyanosed and having difficulty in breathing. Marked sub-sternal retraction on inspiration was apparent; cough, brassy and persistent. The throat was inflamed. Temperature was 103.2° F. X-ray of the chest was negative. Diagnosis: acute laryngo-tracheo-bronchitis.

Course and treatment.—The infant was placed in an open oxygen tent. Humidity of room was high. Dagenan, gr. 2, every three hours, was given by mouth. A blood transfusion of 120 c.c. was given. Twelve hours after admission his temperature rose to 106.8° F. and the infant's condition remained unchanged. Thirty-six hours after admission the temperature was 102° F. Improvement was apparent and recovery followed in a few days, with a croupy cough remaining for a week. A throat swab was negative for diphtheria, positive for staphylococci and streptococci.

CASE 11

Aged 2 years. A few days before admission to hospital this child developed what appeared to be a head cold; the child did not appear to be very ill, but shortly developed a persistent croupy cough and an elevation of temperature. This continued for a day when some difficulty in breathing appeared, which alarmed the parents. The child was brought to hospital. On admission he was apparently very ill. The temperature was 103.8° F. Inspiratory stridor was marked. Sub-sternal and supra-sternal retraction was present on inspiration. Cough was croupy and persistent. The child was slightly cyanosed and extremely restless. Throat inflamed; a white exudate was on the tonsils. Diagnosis: acute laryngo-tracheo-bronchitis.

Course and treatment.—A transfusion of 150 c.c. of blood was given. Dagenan, gr. 5, was given every four hours. The child was placed in a croup tent. Improvement in 36 hours, and recovery. A throat swab was positive for streptococci.

CASE 12

Donald G., aged 2 years, contracted a cold with some cough and fever. After 24 hours the cough became harsh and croupy in character and on the evening of that day the child had what appeared to be an attack of croup. The symptoms did not abate, and breathing difficulties appeared, with a further elevation of temperature and sub-sternal retraction on inspiration. The doctor was called and the child sent to the hospital. On admission, the temperature was 104.4° F. The child was restless and distressed; colour good. Supra-sternal and sub-sternal retraction were noted on inspiration. X-ray of chest was negative. Stridor on inspiration. Slightly muted voice. White blood cells 16,000. Throat was slightly inflamed.

Course and treatment.—Dagenan, gr. 3, was given every three hours; blood transfusion of 150 c.c. was given; the child was placed in a croup tent. In 12 hours the child became worse, very restless and slightly cyanosed. In 24 hours the condition was slightly improved, the child was breathing with less difficulty. The colour also was improved. Dagenan, gr. 2, was given every 3 hours. Recovery with croupy cough persisting for 10 days. A throat swab was positive for streptococci.

CASE 13

Ronald H., aged 1 year. Twenty-four hours before admission to hospital the child developed a cold with cough, running nose, and fever. The parents did not think the condition serious, and did not call the family doctor until the next day. During the night he developed a persistent croupy cough, and in the morning some signs of breathing difficulty were present, with elevation of temperature and restlessness. On admission to hospital the child was breathing with difficulty and with a slight inspiratory stridor. Sub-sternal retraction of the chest was marked on inspiration. The temperature was 103.8° F.; throat inflamed; white blood cells 17,000. Diagnosis: acute laryngo-tracheo-bronchitis.

Course and treatment.—Dagenan, gr. 3, was given every four hours; the child was placed in a croup tent; blood transfusion of 150 c.c. of blood was given. A throat swab was positive for staphylococci and streptococci. After 24 hours the infant improved; breathing was less difficult. The temperature was 101° F.; colour improved. Recovery—without complications.

SUMMARY

Thirteen cases of acute laryngo-tracheo-bronchitis are reported. Nine cases were treated with sulfanilamide and four with sulfapyridine. The usual standard dosage was used. As an adjunct blood transfusion was given in all cases on admission to hospital, and the child maintained in an atmosphere of intense humidity. The oxygen tent was utilized in a small percentage of cases. Of the 13 cases 2 died—one in the admitting room of the hospital. The other child, ill for three days, was moribund on admission and died in three hours, the parents refusing tracheotomy and autopsy.

While it is admitted that these cases pass quickly from an apparently non-critical stage to one of extreme seriousness, if prompt diagnosis is made when persistent obstructive symptoms appear and treatment given, the great majority may be saved without surgical intervention.

May our medical instructors and writers give more attention to this serious disease of young childhood.

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PHYSICAL CHARACTERISTICS ACCOMPANYING BLOOD GROUPS II AND IV (MOSS)

By F. SMITH

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THIS article is submitted in the hope that the subject may arouse further discussion and investigation, and that an index may be found for the rapid selection of universal donors in the stress of mass transfusion therapy in war-time. As a basis for the surmises and statements herein the impression from some 3,000 groupings over a period of 30 years is considered, but more especially the grouping in recent years of some 250 donors. There is little room for assertion in dealing with a comparatively small group, but the summary is considered to be definitely affirmative. To give a concrete expression of the idea we propose to advance, we might point to the Rt. Hon. Winston Churchill as a Group II, and to the Rt. Hon. Neville Chamberlain as a Group IV, using as guide only the physical appearance and characteristic utterances of the two men.

Any such selection is, of course, to be checked by at least two methods using the agglutinin-agglutinin reaction as a basis.

In grouping a large series of people one observes certain extraordinary occurrences some of which are recurrent to such an extent as to indicate phenomena outside the probability of chance. For example, two or even three people of Group I or of Group III, which comprise only 5½ and 9½ per cent of the population respectively, have from time to time arranged themselves together in the waiting line at the laboratory. When a technician finds in order 8 or 10 group II or IV, then, for example, 3 of Group I he will assuredly doubt his technique. Yet such results are not unusual, when the methods of grouping in use are beyond reasonable criticism. Further, I have found as many as 8 volunteer donors (who had presented themselves at the laboratory), all to be of Group II. Similarly, 9 men who came together for grouping belonged to Group IV.

By selecting such a group for observation, one may form a rough guide for the selection of donors:—

GROUP II.

The fleshy, lateral, stocky type. The conversation is likely to be rather slow and guarded. Emotions are well under control, at least to outward appearance. Self-consciousness may be evidenced. They appear to approach, or to be included in the cycloid type in the bilateral classification.

GROUP IV.

The long, tall types. The conversation is rapid and spontaneous, and emotions and excitability may be shown. They are not given to shyness and include the self-sufficient, high-pressure salesman type. They may be included in the schizoids, in the bilateral classification.

These indexes are given as a rough guide only, and as such have had practical application and have proved of value to the author.* If four or five prospective donors are presented for a transfusion, one may select with reasonable chance of success at least one Group II or one Group IV. These selections are the first to be grouped and matched, and by this means much valuable time is saved, in the urgent need for getting blood into the exhausted patient, without delay. It is considered reasonable to assume that, should a need for donors occur urgently following an enemy raid, one would have a very good chance of selecting, from a company of 100 men, 10 to 15 universal donors. (Group IV, Moss).

It seems evident that, in making such a selection for matching, one must take into consideration the effect of environment on the individual. An angular thin type may become broad by muscle-producing work or exercise, or stout by an excess of easy living. A hard life may have

* It is admitted that the author has lived 15 years in this district, and has the added advantage of (in many instances), knowing the parents and relatives, as well as the prospective donors. Also, when the donor is of North American Indian blood (as he not infrequently is in this locality), he is more than likely in Group IV.

reduced the fleshy person to the thin angular appearance.

One will no doubt gather from the rather sketchy rules which I have given that if one is successful in selecting required groups for given recipients, a "sixth sense" is brought into play. Such may be the truth, and therefore the observations lose the right to be called "scientific". So long as such a selection does not prejudice the technician in his subsequent matching, it is surely permissible if it widens the field for the use of living donors.

If brought to our homes, the question of whether we shall give our relatives blood of cadavers, dried blood, pooled placental blood, or the fresh blood of healthy youths, most of us would be old-fashioned enough to choose the last-named.

In endeavouring to gain further guidance in regard to selection of sight donors, a group of 29 volunteers was considered in respect to employment followed by them, and the following results were obtained:—

	Group II.	Group IV.
Nurses	2	1
Storekeepers	2	1
Policemen	1	2
Farmers	2	1
Clerks	3	1
Boarding-house proprietors ..	1	1
Technicians	2	0
Labourers	2	4
Physicians	1	1
Artist	0	1

Another group of 42 (21 of blood Group II and the same number of blood Group IV) were considered as to age, *i.e.*, at time when people would have the incentive to volunteer for service to their fellows.

GROUP II.			
Ages	20-30	30-40	40-50
Number of volunteers	7	7	7

GROUP IV.			
Number of volunteers	5	11	5

Any value, other than points of interest to be deduced from these figures, is left to the imagination of the reader.

The imperfection of methods of grouping, applied in a practical way, is realized when one considers that Schiff estimates the possibility of distinguishing 1,000¹ different types, by blood agglutinin-agglutininogen reaction, in the genus homo. In grouping blood, even in the ordinary manner, a technician will observe that clumping occurs with widely varying speed and completeness; sometimes the clusters of cells are formed in 10 seconds and in other cases it may take half an hour to show definite grouping; also clumping may be complete, or may leave many cells outside the masses of corpuscles. Presumably these may be due, among other factors, to variation in the bloods and also in observable characteristics of people from which they are taken.

In our anthropoid ancestors each genus is comprised of a separate blood group.² From crossing and evolution of these groups our present great variety and number of types occurs. It seems reasonable to assume that, should this present or a subsequent war, destroy our civilization, and all people in exposed territories should be "wiped out", leaving only scattered survivors in the fastnesses and ravines of the mountains, these residues will devolve and arrange themselves in groups, one blood group only in each tribe.

CONCLUSION

1. Blood-group characteristics being of the Mendelian order, it appears that other, and macroscopically observable, traits, accompany the blood groups.

2. Some help may be gained by the hæmatologist, in considerable advantage in mass transfusion, in considering the outward appearance and behaviour of prospective donors, in making selections of Group II's and Group IV's.

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It is stated that the German railways have acquired half a million wild rose plants which it is proposed to grow in all suitable places along the tracks, the reason being that the hips of *Rosa canina* are a particularly rich source of the anti-scorbutic vitamin C. In England, in

spite of the shortage of lemons and the high price of oranges, there can be no danger of scurvy whilst raw fruit and vegetables and those canned by modern vitamin-conserving processes are available.—*J. Roy. Inst. of Pub. Health & Hygiene*, 1940, 3: 239.

Case Reports

SIMULTANEOUS PERFORATION OF DUODENAL AND GASTRIC ULCER

BY GEORGE H. STOBIE

Belleville, Ont.

There are many reported cases of multiple perforations of gastric ulcers, also many cases of multiple perforations of duodenal ulcers, but a fairly extensive perusal of the literature has failed to show a case of simultaneous perforation of both. I therefore thought it would be of interest to report this case, especially so since the patient has been followed for fourteen years, after that time.

W.G., a farm labourer, aged 18, was admitted to Belleville General Hospital on July 31, 1926.

Family history.—Nothing known.

Past history.—For the previous two months he had been treated by Dr. Welsh, of Roslin, for duodenal ulcer, complaining of epigastric pain, which commenced about two hours after food, accompanied by eructations of gas and hot, bitter-tasting fluid. These symptoms were always relieved by taking food or soda.

Present illness.—On July 31, 1926, while working in the field he was seized with a violent pain in the epigastrium. He collapsed and lay quietly in the field for about one hour, during which time he vomited twice.



Fig. 1.—X-ray of the patient taken at Belleville General Hospital, 14 years after perforations. It shows duodenal deformity and a deep incisura opposite the site of the resected gastric ulcer.

The vomitus contained food and red cherries of which he had eaten freely during the afternoon. He was then carried to his home, and I saw him four hours later when admitted to hospital.

Physical condition on admission.—He was in a state of extreme shock, face pinched and white, covered with cold beads of perspiration; temperature 97 by mouth, pulse small and 110 per minute. Otherwise, he was a well developed, well nourished, young man. His teeth, tonsils and nose were healthy.

The abdomen did not move during the respiratory cycle. It was board-like to the feel and there was a point of maximum tenderness to the left of the mid-

line, about half way between the ensiform and the umbilicus. There were no distension, no obliteration of liver dullness and no demonstrable free fluid in the peritoneal cavity. The pain was increased by turning in bed.

Pre-operative diagnosis.—Ruptured duodenal ulcer.

Operation.—Under ether anaesthesia the abdomen was opened through a right upper paramedian incision. Gas, free purulent fluid, and food which contained red cherries were present in the abdomen. On the anterior wall of the duodenum, 1½ inches below the pylorus, was a large calloused ulcer which was adherent to the under surface of the liver. A small perforation was present at the margin, through which gas and bile-stained fluid were oozing. This was separated from the liver and closed by sewing an omental graft over it with three sutures of chromic catgut. While aspirating food, cherries, and fluid from the abdomen a large calloused ulcer was found high on the lesser curvature of the stomach, with a hole large enough to admit the little finger. This was where the food and cherries were coming from. It was excised with the cautery and closed with two rows of sutures. The abdomen was closed with a Penrose drain in Morrison's pouch and one between the liver and diaphragm.

Post-operative treatment.—This consisted of intravenous therapy for three days, then fluids by the mouth. With the exception of a slight attack of pleurisy which occurred on the 10th day after operation, which quickly subsided, he had an uneventful recovery, leaving the hospital within three weeks.

I did not see this man again until July, 1940, when he consulted me for a large varicose ulcer on the left leg. He stated that he had never experienced the slightest discomfort from indigestion since his operation. He eats a normal diet. X-ray examination of the stomach was done on July 15, 1940.

Several points of interest are present in this case.

The patient was only 18 years of age. The majority of gastric ulcers occur between the ages of thirty and forty.

His symptoms were present only about two months, but his ulcers were both large and indurated.

It is rather hard to fit this case into the accepted views on the etiology of peptic ulceration; a placid youth with a perfect set of teeth and no other signs of infection that might be a focus of infection.

It is easy to see how only one perforation was found and closed in practically all of the cases in the literature. If this patient had not been eating cherries prior to his perforations, I doubt if I would have found the perforation in the stomach.

It is interesting to know that such complete and prolonged relief from symptoms can follow the perforation and surgical treatment of two large indurated ulcers.

CARBUNCLE OF THE KIDNEY

BY WALTER P. HOGARTH, M.B.

Fort William

Carbuncle of the kidney is such a comparatively uncommon lesion that practically all reports consist of case histories. Brady¹ in 1932 and Graves and Parkins² in 1935 reported on this condition after an extensive study of the literature up to that time.

Graves, in emphasizing the relative rarity and the difficulties in diagnosis, analyzed the reports on 66 reported cases and presented one of his own. Since that time further reports of isolated cases have appeared.

The name carbuncle is quite descriptive of the lesion on account of its great similarity in appearance to the classical carbuncle of the neck. It is considered as due to a metastatic staphylococcal involvement of the cortex of the kidney. The pelvis is rarely involved in the process. Most reports stress that the condition is secondary to a furuncle or some remote infection elsewhere in the body. In the case being presented there was no such history, nor in after questioning was it possible to arrive at any accurate conclusion as to the primary cause. However, certain of the findings appear to justify the recording of the case.

H.Y. 15, male, aged 43, was admitted to hospital on the evening of April 26th by Dr. Watsyk who had seen the patient for the first time that evening. The patient stated that he had been well until three weeks before when he began to complain of weakness and loss of appetite. He had no specific complaints and his associates called him lazy. Finally the loss of 25 pounds in weight and increasing weakness made him give up his job in a road camp and come in to the city to seek medical advice. On admission the man looked extremely ill but the physical examination was essentially negative except for a dull ache elicited in the left loin. His urine showed a trace of albumin and sugar and about 15 pus cells per high power field.

I was called in consultation and found a man who appeared to be much sicker than any findings would account for. The left renal region was tender on deep palpation and cystoscopic examination was advised. This was done on April 29th and on account of the extreme toxicity this was limited to a quick insertion of ureteral catheters and a pyelogram. The bladder findings were negative. The pyelogram showed elongation and narrowing of the upper and lower calyces with the middle calyx much distorted. There seemed to be an intrarenal mass which was distorting the pelvis by pressure, although there were traces of sodium iodide in the mass. The only aid from the pyelogram was the confirmation of disease involving the left kidney.

Medical and conservative treatment was tried for several days but the patient's condition rapidly became worse. He was very toxic and his temperature reached 104°. As a last resort it was decided to expose the kidney. This was done on May 5th using the ordinary oblique lumbar incision. The perirenal fascia was oedematous and thickened; when this was opened a small

quantity of thick pus was liberated. A swab was taken for culture and as the amount of pus did not explain the seriousness of his condition the opening in the fascia was enlarged. This exposed a fairly freely movable kidney with a large fungating mass oozing pus involving most of the lateral surface.

A tentative diagnosis of carbuncle was made and the kidney was removed without undue difficulty.

The culture report of the pus from the abscess and from the kidney itself was *Staphyl. aureus*. The report of our pathologist, Dr. J. W. Bell, was kidney carbuncle.



The patient had a slow rather stormy convalescence but his improvement, while slow, was steady. He left hospital on August 19th, his wound having been dry for some time.

On account of the rarity of the condition Dr. Bell and I felt that we would like our opinion confirmed. The specimen was therefore sent to Dr. W. L. Robinson, Pathologist of the Toronto General Hospital who confirmed the diagnosis.

His findings were as follows.

The gross specimen consists of a kidney with some attached perinephric fat measuring over-all 12.5 x 7.5 x 7 cm. The external surface of the kidney, in the region of both poles and kidney pelvis, is rather smooth and greyish white in colour, except at one pole where the capsule assumes a dark brown colour. The kidney is markedly distorted, particularly on the greater curvature by a large, projecting, shaggy mass having an irregular outline and varying in colour from a greyish brown to black. This mass is situated in the central portion of the kidney and measures 6.9 x 7.8 cm. from the exterior. The perinephric fat is in intimate contact with this mass and adherent to it. From the exterior this mass appears to be compressing the kidney structure inwards towards the hilus. The cut surface reveals a large mass having a greyish-white, slightly honey-combed appearance and of a cheesy friable nature. On section this mass measures 6.8 cm. in its greatest diameter. It appears to be well walled off from the surrounding kidney tissue but extends right into the kidney for a distance of 4.9 cm., so that only a small rim of actual kidney tissue, measuring 1.3 cm. in thickness, remains at the hilus. From the cut surface it appears that the only

viable kidney tissue remaining is situated at both poles, and in the small compressed region of the hilus. The solid mass compressing the kidney appears to be of a pus-like nature in many areas.

Microscopically, this is a large kidney abscess which has been walled off by a coarse layer of chronic granulation tissue heavily overrun by numerous polymorphonuclears, plasma cells, lymphocytes and a few eosinophiles. Within the abscess there are large numbers of inflammatory cells and exudate. The abscess is markedly compressing kidney structure, and the adjacent tissues show a heavy inflammatory cell infiltration. Many of the tubules are of a necrotic nature, while the remainder are showing degenerative changes. A few are dilated and contain pus. Towards the cortex the glomeruli are congested and a number have undergone complete fibrosis. The interstitial tissue throughout is also infiltrated, both diffusely and focally, with large numbers of lymphocytes, plasma cells and polymorphonuclears intermingled. There is no evidence of malignancy nor of specificity of the inflammatory process.

SUMMARY

1. A proved case of kidney carbuncle is presented.
2. The causative organism was *Staph. aureus*.
3. No primary focus was detected.
4. Diagnosis was made after operative exposure.
5. Patient recovered after primary nephrectomy.

I am indebted to Drs. James Bell and W. L. Robinson for their excellent pathological reports.

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A SULCUS TUMOUR

By LOUIS J. BRESLIN

Toronto

W.G., a white male, 66 years of age, first consulted me in 1934 because of a mild diabetic condition.

Past medical history.—Pneumonia in 1923; suprapubic prostatectomy for benign hypertrophy of the gland in 1930.

Family history.—Not significant.

Physical examination at that time revealed a healthy looking man, 5 ft. 11 inches in height and weighing 174 lbs. The fundi exhibited slight pallor and some tortuosity of arteries with grade 1 narrowing of their lumen. The veins were nowhere compressed. Vision, hearing, etc., excellent. The tonsils were enlarged and looked diseased. The mouth was edentulous, 2 plates being worn, and a large lipoma was seen at the back of the neck. The heart showed evidence of some hypertrophy and dilatation, the apex being outside the left nipple line; short systolic murmur could be heard here; an occasional extrasystole was present. Blood pressure in both arms 160/90 mm. of Hg.; the peripheral vessels were definitely sclerosed. Fluoroscopy of the chest revealed a shadow at the left apex extending to the first rib on that side; the percussion note was but little impaired here; breath sounds normal. Physical examination was otherwise negative. The urine had specific gravity of 1.024, showed albumin 1 plus, sugar 2 plus, white blood cells 3 plus, and occasional coarse granular casts. Fasting blood sugar 0.167; non-protein nitrogen 38, cholesterol 220, van den Bergh 0.4 units. Red blood

count, 4.2 million, white blood count 8,000, Hgb. 82 per cent (Sahli), smear normal.

The patient pursued a satisfactory course until January, 1936, when he exhibited evidences clinically and electrocardiographically of posterior coronary occlusion. Satisfactory convalescence ensued at the end of two months.

In October, 1937, he began to experience severe pain in the left scapular region, spreading to the shoulder and later on the arm. This became aggravated in paroxysms, especially whilst moving the affected limb. The pain gradually became more persistent, extended along the inner aspect of the arm, finally reaching the outer 2 or 3 digits. No atrophy, sensory or colour changes were manifest. X-ray films revealed the shadow at the left apex which I had previously noted in 1934. Moderate osteoarthritic changes were evident throughout most of the spine. The patient went south in January of 1938. His pain became progressively worse so that he lost weight and strength. He developed about this time a left-sided Horner's syndrome, and when seen by Dr. E. S. Nichol, of Miami, was considered to be a case of superior pulmonary sulcus tumour.

Upon his return to Toronto in March of 1938 he presented an emaciated appearance, and was manifestly suffering excruciating pain. The findings were complete Horner's syndrome; the skin of the face, upper arm and adjacent chest wall was dry and flushed, whereas the skin below nipple line perspired profusely. Left arm showed mild degree of weakness in all muscle groups; slight atrophy was detectable in the muscles of the forearm as well as those of the hand. Reflexes present and equal in both upper extremities. No definite sensory changes were detected. Lumbar puncture yielded clear fluid, pressure of 110 mm. water, free rise and fall on Queckenstedt. Kahn test negative; total protein 47 mg. per 11 c.c.; colloidal gold unchanged; 2 lymphocytes per c.mm.

Re-check x-ray films of chest, cervical and thoracic vertebrae, ribs, etc., were taken (see Fig. 1). Several radiologists who were consulted referred to "ill defined area of increased density in the left upper chest, lower border of lesion roughly paralleling lower border of first rib. This area, of fairly homogeneous density. No evidence of destruction of bone in any of the ribs, cervical or thoracic spine. No displacement of trachea." One radiologist considered the sternal end of the 1st left rib to be involved.

The patient went down hill rapidly and requested exploratory operation and if possible rhizotomy. The former procedure was performed at St. Michael's Hospital, Toronto, on May 1, 1938. A hard apical pulmonary tumour underlying and attached to the pleura was exposed. The mass pressed upon and distorted the brachial plexus. Biopsy material obtained revealed an anaplastic form of carcinoma (see Fig. 2). Pneumonia and cardiac failure set in. Exitus occurred on the fourth day after operation. Permission for autopsy was refused.

This case is reported for two reasons. (1) To draw attention again to a syndrome first described by Pancoast in 1924, *viz.*, radiographic evidence of dense shadow at the extreme apex of one lung; erosion of one or more upper ribs, usually close to their vertebral attachment; pain at first paroxysmal, later continuous, commonly commencing at the outer border of the scapula, corresponding shoulder and upper chest regions, oft-times extending into the axilla, inner side of arm, but rarely beyond the elbow; weakness; atrophy of the smaller muscles of hand; development of Horner's syndrome. It is interesting

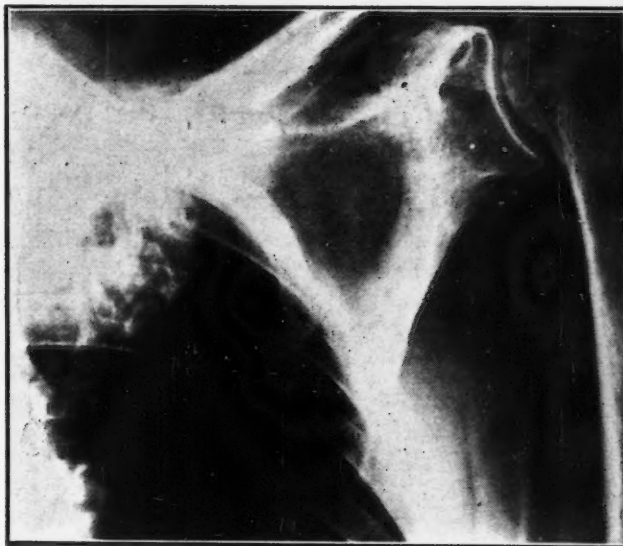


Fig. 1

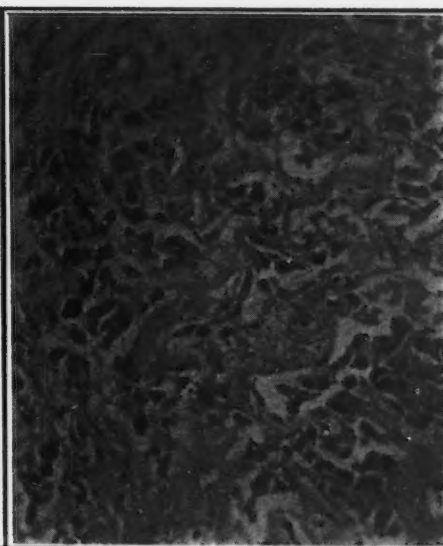


Fig. 2

to note that Hare⁵ described a similar case in which he found at autopsy a hard nodular mass extending up to the origin of the brachial plexus. (2) Because of the fact that this apical shadow was noticed in September of 1934, being interpreted at that time as a pleural thickening. It is unfortunate that no photographic records were taken then. So far as I could judge, there was no noticeable increase in size of alteration in nature of this shadow. Feldman, Davidsohn and Danelius² suggest that dense pleural apical adhesions may precede development and growth of such a tumour and facilitate its expansion towards the thoracic wall and spinal column.

Pancoast was of the opinion that sulcus tumours originated from the epithelium, of one of the lower branchial clefts, but not from the lungs, pleura, ribs, or mediastinum. It is now believed that the entire symptomatology can be produced by any inflammatory or tumour mass,

either primary or secondary arising in this location. Although apical bronchogenic carcinoma can therefore produce this clinical picture it is relatively unusual for it to do so. When such is the case there is striking absence of the usual symptoms of lung neoplasm, viz., cough, mucoid expectoration, hæmoptysis, etc. It has, further, become increasingly apparent that invasion of rib and vertebræ is not as constant a finding as Pancoast considered it to be.

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Clinical and Laboratory Notes

STUCK SYRINGES

BY FREDERICK WERTHENBACH

Unity, Sask.

In every doctor's office there is the occasion when a syringe becomes stuck. Many methods and devices are in use to separate the syringe parts, some of which are costly, both in equipment and breakage. Most of the surgical firms have a metal syringe which fits the end of the syringe which has become stuck, and warm water may be forced into the stuck syringe. However, if the least pressure out of a straight line is put on this equipment the end of the syringe is

usually broken. To overcome this breakage, and because of the original cost of the syringe provided by the surgical firms, I was of the opinion something very simple should be used, and I had this made for a few cents. It is as follows. An ordinary 20 gauge needle to fit our syringes was soldered into an old trocar tube, the end of which had threads which fit on an Imperial dental syringe. The equipment is about three inches long, is flexible, and the total cost was only a few cents. Any ordinary syringe may be used, the smaller the barrel the better, and two needles soldered together. This little invention is made necessary because surgical houses have overlooked the demand for a "like to like" adapter, i.e., Luer to Luer, etc.

Therapeutics and Pharmacology

THE TREATMENT OF INTESTINAL PARASITES BY THE DERIVAS DUODENAL LAVAGE METHOD

BY PAULINE BEREGOFF-GILLOW

Montreal

DeRivas* showed the extreme sensitiveness of metazoan and protozoan parasites to relatively slight variations in temperature. A temperature of 45 to 47° C. was found sufficient to kill these parasites within 5 to 10 minutes. Upon this fact the trans-duodenal method of irrigation was based, and, when properly used, may eradicate any protozoan or metazoan parasites inhabiting the small intestine. The same applies to those parasites present in the colon.

The method, described below, was used on a number of patients with excellent results: 8 with *Dibothriocephalus latus* infestation; 1 with *Tænia solium* and *Ascaris lumbricoides*; 2 with *Tricocephalus*.

METHOD

1. The patient is instructed to take 4 drams of Epsom salts the night before, followed in the morning by an enema of 2 quarts of 2 per cent bicarbonate of soda. No breakfast.
2. Two oz. of equal parts of 30 per cent Epsom salts solution and pure glycerine is inserted through the duodenal tube, care being taken that the tube is in the duodenum.
3. The patient is kept on the right side for one-half an hour after the $MgSO_4$ -glycerine solution is injected.
4. A solution of 1 per cent bicarbonate of soda at 47° C. is poured gradually through the duodenal tube, until the patient complains of cramps. (About 3 quarts of solution have been used).
5. The patient is placed on an evacuation chamber, expelling the intestinal contents with the parasites.
6. Flushing of the intestine is continued until the intestinal solution comes out clear.

The hot glycerol-magnesium sulphate solution

* DeRivas, D.: The effect of temperature on protozoan and metazoan parasites, and the application of intra-intestinal thermal therapy in parasitic and other affections of the intestine, *Am. J. Trop. Med.*, 1926, 6: 47.

retracts the hooks of the parasites from the intestine, kills the parasites, and the liquid flushes them through. The method is safe and most reliable if properly used.

THE MANAGEMENT OF BURNS

The management of severe burns requires careful attention to the prevention of shock, or its treatment if it is present, and scrupulous cleanliness in handling the burned area so as to avoid contaminating the wound.

The severely burned patient must be considered a very sick patient who has a threatening toxæmia, alterations in the blood chemistry, a wound very susceptible to infection, and pathological changes in organs remote from the skin.

The essential principles which must be observed are: control of pain and restlessness, keeping the patient warm, giving fluids and blood transfusions when indicated, determining the loss of blood constituents by frequent blood studies, treating the burned area with as much aseptic precautions as a surgical incision, the prevention of skin contractures by proper and timely splinting, and early grafting of skin when necessary.

In 1937 there were 7,928 deaths from burns, fire, and special accidents in the United States. Of all the deaths resulting from burns 45 per cent occur in children less than 6 years of age and 80 per cent of these should be considered preventable. The most good in the prevention of burns can be accomplished by the family physician, through his natural contact with his patients in their homes.

Research on burns has been largely concentrated on explaining the so-called toxic phase, which appears in from eighteen to twenty-four hours after the accident. Three theories have arisen: the physical, which assumes that there is local leakage of fluids and plasma proteins from the blood, resulting in a too concentrated condition of the blood and circulatory failure; the theory of contamination of the burned area with bacteria, which has not had much support; and the theory that a specific toxin is formed at the wound and that this is absorbed and goes into the circulation, resulting in toxæmia and collapse. The toxic theory has had the most support.—Roy D. McLure, in *J. Am. M. Ass.*, 1939, 113: 1808.



Editorials

MEMBERSHIP

MEMBERSHIP fees in the Canadian Medical Association for the year 1941 become due and payable in January. Under the terms of Federation by which the nine Provincial Medical Associations now enjoy Divisional status within the Canadian Medical Association, membership fees will be collected by and through the nine Divisions. Each member, therefore, will be called upon by his provincial medical association to pay the C.M.A. fee along with the fee levied by the provincial body. It is hoped that every member will recognize the call when it is made upon him or her, and that the response will be prompt and unanimous. The sending out of fee-reminders is costly, and if every member would keep this in mind considerable expense would be saved to the several Divisions.

Under the terms of Federation the Canadian Medical Association reduced its fee 20 per cent to all members of the provincial Divisions. This means that every member in good standing within a Division may be a member of the Canadian Medical Association by paying an annual fee of \$8.00. It is confidently anticipated that our present membership will be sustained during the year 1941; but that is not good enough. There are upwards of 4,000 medical practitioners in Canada who are not members of the Canadian Medical Association. It is difficult to believe that this large number of doctors are indifferent to the need for a united medical profession or to the advantages which could accrue to the profession if

we were a thoroughly united body. It is possible that we may have failed in the past to bring to the consciousness of these practitioners the claims of the Association upon them, or the nature of our work and accomplishments which challenges their support. During the year which has passed the Canadian Medical Association has been recognized by Governmental authorities of Canada as the mouthpiece of the medical profession. More than 9,000 doctors, members and non-members alike, have been willing to place in the hands of the Association documentary information in respect to the part they are willing to play in this time of war. In the fields of medical education, medical economics, legislation, and in many other directions the Association has served the profession to the best of its ability. The *Journal* of the Association has attained a very high place in medical journalism throughout the world, and month by month carries to our members a wealth of material. Can we not during this coming year attract to membership the 4,000 who, whether they know it or not, participate in our activities and enjoy the fruits of our labours, and who, perhaps, are waiting for personal invitations to pull their weight in the boat? If each member would regard himself as a recruiting officer to bring in one new member how easily the problem of national membership would be solved. Will you not make it your task to do your part towards closing the ranks during this coming year?

T. C. ROUTLEY, *General Secretary*.

LA NOUVELLE POLITIQUE DU JOURNAL DE L'ASSOCIATION MÉDICALE CANADIENNE

LE *Journal* de l'Association Médicale Canadienne inaugure une nouvelle politique avec la présente livraison. A la suite des demandes de la division provinciale québécoise et après entente avec l'exécutif de l'Association et le comité de rédaction, le français qui n'apparaissait dans ce *Journal* qu'en de rares occasions y prendra place désormais de façon régulière. Le *Journal*

devient en fait une publication bilingue. Tous les mois paraîtront, en français, des analyses d'articles médicaux, des nouvelles des universités et sociétés canadiennes de langue française, des notes sur les manifestations sociales de la médecine française du Canada. A l'occasion, le *Journal* publiera les articles et travaux français qu'on lui soumettra. C'est le docteur Jean Saucier,

professeur agrégé à la Faculté de Médecine de l'Université de Montréal qui a bien voulu accepter la tâche de diriger ces nouvelles rubriques du *Journal*.

L'Association Médicale Canadienne, organisation nationale, bilingue par les personnes qui la composent, veut accorder au français, dans sa publication, la part qui lui revient. C'est un geste courtois; c'est aussi bien un acte juste. Les médecins français du Canada ne peuvent que s'en réjouir; nos confrères de langue anglaise n'auront qu'à s'en féliciter.

Cette nouvelle politique du *Journal* aura, croyons-nous, plusieurs effets heureux. Celui, d'abord, d'accroître le prestige de l'Association et son autorité auprès des gouvernements et du public, en montrant qu'elle réunit toutes les forces spirituelles de la médecine canadienne. Ce geste provoquera sans doute aussi, pour l'Association, le recrutement d'un plus grand nombre de membres de langue française. Au moment

ou toutes les volontés du pays sont tendues vers un but commun, où l'on prêche l'union pour la sauvegarde de notre liberté, rien n'est plus apte à favoriser le rapprochement des deux principaux groupes ethniques du pays que le geste qu'accomplit notre Association. Si l'on pouvait comprendre une fois pour toutes, au Canada, que dans tous les domaines, sciences, arts, industries et relations sociales, l'ère de la bonne entente verbale doit avoir vécu et doit faire place à la collaboration sincère, basée sur la compréhension, l'estime et l'intérêt national, bien des problèmes seraient résolus. Cette collaboration fera bien plus pour l'unité canadienne que tous les beaux discours. Il faut que ces choses-là soient dites et répétées.

La diversité et l'unité ne sont pas des antinomies; toutes deux contribueront plutôt à faire de l'Association Médicale Canadienne et de son *Journal* une œuvre plus complète, plus forte.

L. C. SIMARD.

Editorial Comments

Plans for the Future

With this issue the *Journal* has entered upon a new year of influence. Our readers will notice an innovation in the matter of its content. As a policy it will endeavour henceforth to meet as far as may be some of the needs of our French-speaking confrères. The War has brought many changes, among them an increased realization of our brotherhood and of the desirability of closer co-operation between the two great sections of our profession in Canada—those of French and those of British origin. The times seem propitious for a change. As a body which purports to reflect the character of Canadian medical men as a whole and to further their interests the Canadian Medical Association welcomes any opportunity to increase its usefulness. We think that the change referred to is a step in this direction. We know that as a result of the trouble in Europe the flow of medical journals in the French language to Canada has practically ceased. No French journal has reached the McGill Medical Library, for instance, in weeks. Our French-speaking colleagues are, therefore, debarred from a usual source of inspiration,

and, perforce, must turn elsewhere to supply their need. Our plan in the meantime is largely tentative and will not be executed on a large scale. If it prove helpful no doubt it will grow. We are pleased to state that it has received a cordial welcome, and some of the leaders in the French-speaking profession have promised their co-operation. We shall work in harmony with *L'Union Médicale*, we should add.

In brief, we may say that we intend to publish some articles in French if so desired; we shall notice monthly news items, reports of medical societies, the work of universities; and present abstracts in French from current British and, particularly, from Canadian medical journals.

To these ends Dr. Jean Saucier, professeur agrégé in the University of Montreal, has been appointed chairman of the provincial editorial board for Quebec and will have general charge of the news in that province. Dr. Yves Chaput, of the Notre Dame Hospital, Montreal, and Dr. Pierre Smith, of the St. Luc Hospital, Montreal, have been appointed abstractors. We are also very pleased to announce that Dr. Charles Vezina, of Quebec City, has consented to serve as provincial correspondent, as representing Laval University. He takes the place of the late regretted Dr. P. C. Dagneau. All in all, we think we have made an excellent start.

A.G.N.

The Campaign against Venereal Diseases in the Province of Quebec

We commend to the attention of medical men everywhere, and indeed to all members of the non-medical public who may see this, the arresting article by Dr. Jules Archambault entitled "The Necessity for Legislation and Social Service in Order to Eradicate Syphilis in the Province of Quebec." Dr. Archambault is Serologist and Director of the Division of Venereal Diseases, Ministry of Health, Province of Quebec, and also is Associate in charge of the Dermato-syphilological Service of the Hotel-Dieu of Montreal. He, therefore, is in a position to know whereof he speaks.

Three subjects of medical concern stand out pre-eminently in the progress of any country, of Canada no less than any other. These are Cancer, Tuberculosis, and Venereal Diseases. Always important, they become more insistent in time of war, when it is vital that the health of a nation be brought to and maintained at the highest peak possible. This would seem to be an appropriate time to increase our efforts here in Canada.

For the time being we can do little more in the case of cancer than to insist on earlier diagnosis and to improve our methods of treatment by means of surgical intervention and the use of radium. We do not know its cause. With regard to tuberculosis we are in a better position. We know the cause and how to prevent its operation, though we have no specific cure by means of drugs. The eradication of tuberculosis is by no means complete, but is within sight. With syphilis we are in a still better position, scientifically speaking. We know and understand the germ causing it, we know the many pathological conditions which it causes; we have curative drugs which are very effective. That being the case, why not apply our knowledge? This, practically, is not so easy as it would seem. Even more than in the case of the two conditions first mentioned, if that be possible, do we need the co-operation of all classes of the community—the public, to realize the situation and be willing to bring their problems to the proper quarter; the doctors, to acquaint themselves with the most approved lines of treatment and to apply them efficiently; and the public health authorities, clothed with authority, to co-ordinate the whole effort.

Time was when there were certain "magnificent reticences" and some not so magnificent. That time is past. We may now "call a spade a spade". People are, generally, much more health-conscious than they were; they are looking for light. But, they need competent advisers and leaders. In addition to medical men newspapers and service clubs can do much in this regard.

In the case of syphilis, however, there is always the element of shame to be considered.

Some are loath to report their condition. Even if they do they cannot always be depended upon to carry out their treatment faithfully, for it is long, tedious and unpleasant. Syphilis is curable, but is deceptive in that insufficient treatment, while it removes the more obtrusive external manifestations, may still leave the patient in a condition dangerous to himself and others.

We no longer see the disgusting gross manifestations of syphilis in our hospitals. This does not mean that there is less syphilis about. It does not necessarily mean that the disease is milder in type, and is dying out. We have known of syphilis now for about four hundred years, and this is not likely. It is much more probable that most cases of the disease receive nowadays some amount of treatment which modifies its course without curing it. If so, the situation remains highly dangerous and demands remedy.

Syphilis not only affects the individual himself but may be communicated to his entourage, and to his children of the second and third generation. It may attack any system of the body and helps to fill our insane asylums. All this is nothing new, of course, but is merely cited to call attention once more to a dangerous situation and to support the efforts of those who are endeavouring to remedy it. Notably, we would like to pay tribute to the work of the various boards of health throughout Canada and of the Health League of Canada, among others.

In order to make progress we need still more publicity, more education, more extended facilities for notification, treatment, and follow-up. And it is in these particulars that the health authorities in the Province of Quebec need more extended powers. Fresh legislation is required to make the measures in force at the present time more effective.

Twenty years ago an antivenereal disease campaign was inaugurated in the Province of Quebec. The results were an improvement on earlier conditions, but it was found that the plan instituted was too limited in scope. As a consequence the benefits derived from it were also limited. In spite of it the incidence of venereal diseases seems to be on the increase. It is high time for betterment. It will surprise many to learn that in the Province of Quebec syphilis is not notifiable. Here, at the start, is a serious limitation to the effective control of these diseases. It is also necessary to clothe boards of health with sufficient authority to enforce necessary regulations. Laboratories should be more fully utilized, and the necessary funds provided to ensure more widespread treatment. Dr. Archambault's article deserves careful study. He has set forth the situation fairly, and we have no hesitation in endorsing his statements and in supporting his program.

A.G.N.

The Employment of Qualified Nurses for Clinical Tasks in Hospitals

The noticeable trend toward the greater utilization of nurses' services for clinical tasks in the hospital has received a further impetus by the action taken at the Regina General Hospital. Sharing in common with nearly all non-teaching hospitals an increasing difficulty in obtaining a sufficient quota of interns, this hospital has defined the clinical duties which are to be delegated to certain selected graduate nurses. The following list of duties has been approved by the medical staff, by the director of nursing, and by the hospital trustees: (1) intravenous injections (saline and glucose); (2) interstitial injections; (3) taking of blood for Wassermann tests; (4) intramuscular injections, such as, liver extract, soludagenan, neoprontosil, edwenil; (5) dressings (not sutures, clips, drains or packing); (6) telephoning doctors for orders *re* new patients and condition of sick patients; (7) gastric lavage.

During the past year this question has been much debated at hospital and other conferences. It has been surprising how extensively the services of nurses are utilized for taking blood pressures, giving intravenous saline and glucose, taking Wassermanns, writing histories up to the point of the physical examination, etc. In the very small hospitals nurses have long assisted at the operating table and given "whiffs" in the case-room. The practice has been deplored by some doctors who see in it an infringement on the prerogatives of the medical profession, but the cold fact remains that in the vast majority of our hospitals unless some such person is trained to do the work it is simply not done, or done too late to be of maximum value to the patient. It is a fact that only about 10 per cent of our general public hospitals can get interns, and in many of these the number of interns is far short of the requirement. It is a case of finding some solution for an impasse.

Experience has shown that nurses become very adept. What they may lack in medical background may be compensated for by technical skill and by a meticulous attention to detail. At the same time it would seem desirable to limit such clinical assistance to certain adequately instructed graduate staff nurses on each hospital staff. While every nurse should be capable of taking blood pressures and of giving interstitial injections, the giving of intravenous medication and the recording of histories, for instance, should be confined to certain graduate nurses whose proficiency has been amply demonstrated. It would be essential, too, that these duties be not added to those of an already overworked nursing staff, but that the graduate nursing staff of the hospital be increased to provide for these added responsibilities.

The one factor which has made several hospitals hesitate to give this arrangement official

recognition has been the medico-legal one. This is a possibility that cannot be overlooked. In the final analysis general recognition of the practice will probably be the criterion of its validity. With this in mind, the Canadian Hospital Council at its 1939 session went on record that, in view of the shortage of interns and the increased use in modern medicine of various clinical procedures, the time has now come when certain of these clinical procedures could be assigned to "selected, skilled, and properly qualified members of the graduate nursing staff." By this official recognition of the practice *where interns are not available*, legal acceptance would be hastened. When discussed at the last meeting of the Canadian Nurses Association the principle was approved, provided there be no legal obstacle. HARVEY AGNEW

The Doctor's Handwriting

Every now and then we are reminded of the old charge that the doctor's handwriting is reprehensibly illegible. Evidence is reaching us that some of our fraternity are still doing something, consciously or unconsciously, to substantiate the accusation. We publish here a letter from Dr. H. T. Douglas, Ottawa, which speaks for itself. It is addressed to Doctor Routley.

"After three years of dealing with medical certificates coming from outside doctors and passed through Government departments, I am rather struck with the number of doctors' signatures that cannot be made out without considerable difficulty. Unless the address of the doctor is provided, sometimes we never do know the name of the doctor.

"I am not presuming to ask present-day practitioners to alter their signatures, but I wonder if, sometime in the medical college course, the teaching staff could bring the matter of clearly written signatures to the attention of medical students so that these prospective doctors would take pride in writing their signatures so that they could be read.

"In conclusion I hope you will be able to make out my signature!

I am,

Yours very truly,

(Signed) H. T. DOUGLAS, M.D.,

Medical Investigation Division,
Department of Pensions and National Health."

The exclamation mark is the Editor's. We are glad to testify that Doctor Douglas' signature will pass muster! But even he, we note, has taken the precaution to give us a typed version as well.

In a letter which appeared in the *Journal* (1940, 43: 605) Major-General LaFlèche gently chides us for the same fault. So, there must be something in the charge.

Ordinarily the illegibility of a physician's signature is not of much consequence, unless it be on a prescription or a cheque. It is unfair to the druggist to ask him to decipher the

directions on speculation or to rely on Lady Luck. At the worst a grave mistake may occur; at the best, a waste of time in checking-up.

In times like these, when time, energy, and patience, among other factors, must be con-

served, we as a profession should look to it that we do not make the work of our officials and colleagues more onerous than it is. Otherwise, we may yet have to add to our Departments specialists in Egyptian hieroglyphics! A.G.N.

Special Article

THE NEED OF LEGISLATION AND SOCIAL SERVICE TO COMBAT SYPHILIS IN THE PROVINCE OF QUEBEC

By JULES ARCHAMBAULT, M.D.

Serologist, and Director of the Division of Venereal Diseases, Ministry of Health, Province of Quebec

Twenty years ago an antivenereal campaign was inaugurated in this province with the following results:

1. The diffusion, still incomplete, but nevertheless considerable, among our people of the facts essential to an appreciation of the venereal peril.

2. The organization of serological and bacteriological laboratories, placing free of charge at the disposal of the medical profession the means of diagnosis and control of treatment of syphilis and gonorrhœa. During the year 1939 these laboratories examined 110,000 samples of blood and spinal fluid and 24,500 other specimens for evidence of syphilis and gonorrhœa.

3. The installation of dispensaries, some of which have become instructional centres of repute, where physicians may perfect their technique in the treatment of syphilis, particularly nervous syphilis, and of gonorrhœa.

4. The free distribution of antivenereal medicaments, limited until now to dispensaries and to rural physicians, but which the Division of Venereal Diseases hopes soon to extend to all the physicians of the province.

Had these measures not been applied our venereal disease rate would undoubtedly have increased rapidly during the post-war years, whereas it remained practically stationary until 1937. In the past two years there has been an increase of 20 per cent in the number of new cases reported by our institutions. This re-erudescence cannot be wholly explained by methodical efforts to detect cases of syphilis, for these were practised previous to 1937. It must be admitted that the number of new infections is again increasing.

THE SYPHILIS PROBLEM IN THE PROVINCE OF QUEBEC

Up to the present time notification of syphilis cases has not been required in our province, despite the fact that this disease is infectious and communicable by contact or by heredity to the second or third generation. Although com-

plete statistics on the rate of incidence of syphilis among our people are lacking, we have the reports from the clinics, our numerous observations, and also figures for the urban and rural populations of the United States which confirm our own conclusions.

From the reports received by the Division of Venereal Diseases we know that during the year 1939 approximately 5,000 syphilitics continued their treatment in the dispensaries; 3,000 new patients were registered in these centres; 4,000 syphilitics were treated by private physicians. We arrive at this last figure by taking into account the fact that one-third of the arsenicals employed for syphilis treatment in our province was sold directly to private physicians. Further, this proportion of one-third, representing those syphilitics who pay for their treatment, conforms to that observed in practically every other locality. The total figure, then, is 12,000. This number therefore, represents all the syphilitics treated in Quebec Province during the year 1939. It must be admitted, however, with Dr. Parran, United States Public Health Service, that the number of syphilitics under treatment is only 10 per cent of those persons who are infected. Our total number of syphilitics, consequently, may be taken to be approximately 120,000.

We arrive at the same conclusion and at the same figure if we apply to the industrial and mining centres of our province, where 60 per cent of our population is concentrated, the rate of 6 per cent for cities and towns and 2 per 1,000 for rural districts, which is considered the average incidence of syphilis among the white population of the United States.

Urban population of the			
Province of Quebec ..	2,000,000,	rate 6.0%,	120,000
Rural population of the			
Province of Quebec ..	1,500,000,	rate 0.2%,	3,000
	3,500,000		123,000

The relative immunity heretofore enjoyed by our rural population may be lost as communications with the urban centres are facilitated and become more and more frequent.

From all the evidence, here, as in the United States, syphilis remains, with tuberculosis, the most common of the major communicable infections. Directly or indirectly, it costs the taxpayer more than does any other infectious disease. We have, however, at our disposition all the weapons necessary, if not to eradicate the

disease, at least to reduce it to a problem of minor degree in the course of a single generation. The proof of the validity of this statement has been furnished us by the Scandinavian countries. They have been able to reduce the rate of infections discovered annually to 7 per 100,000 of the population of Sweden, and 20 per 100,000 in Denmark, whereas it was over 180 per 100,000 of our population in 1939, as in the United States in 1936, despite twenty years of an antivenereal campaign waged by means of educational propaganda and general extension of facilities for diagnosis and treatment. It must be acknowledged, in consequence, that these essential measures are in themselves insufficient if they are not accompanied by epidemiological investigation and control.

THE NEED FOR LEGISLATION TO COMBAT SYPHILIS

All the states of the United States and practically all the provinces of the Dominion have already recognized this need and have enacted laws and regulations the general tenor of which is as follows:

Notification of infectious cases of syphilis and gonorrhoea is made obligatory, but this does not necessarily imply that the identity of the patient be revealed.

Treatment is not necessarily obligatory for all cases, but is made obligatory for every person that may disseminate infection.

The State or the Medical Officer has the power to quarantine any person who is recognized to be infectious and who refuses treatment.

Epidemiological investigation is required for all cases of recent infection, that the source of infection may be traced and that all those who may justly be suspected to have been contaminated by this source may be reached.

The need for similar laws in our province is becoming urgent. They will permit us, with the aid of a social service which will have to be instituted, to treat syphilis at its source and to bring to their physicians those persons who, recently infected, abandon treatment before having received the minimum required to render them definitely non-infectious.

In order to understand the import of these laws it must be realized that syphilis is eminently infectious during the first two years, and that it is practically never transmissible after the fourth year of the infection, save by heredity, *viz.*, from mother to child. In consequence, treatment is made obligatory only for persons recently infected and, with certain restrictions, for syphilitic mothers. In every case it will suffice, to conform with the law, to follow regularly the antisiphilitic treatment given by the physician of the patient's own choice or by a clinic.

In order to protect the public health the State reserves the right to intervene when a person is disseminating infection, when he constitutes a danger to others, refusing or abandoning too early the treatment that would render him non-infectious. Experience has demonstrated that the number of recalcitrants

is very greatly reduced simply by reason of the existence of regulations and sanctions that may affect them.

After all, the laws and regulations such as those indicated aim primarily at prostitution which, in its various forms, is responsible for more than 50 per cent of all venereal infections. Gonorrhoea afflicts 75 per cent, and syphilis 60 per cent of girls addicted to sexual promiscuity (Stokes). In a typical city it was found that 30 per cent of the prostitutes were in the period between the first and the third year of syphilis—in other words, in the most dangerously contagious period. And the number of men that may be infected by a single woman is almost unbelievable. These women who inconsiderately disseminate infection are ordinarily impervious to persuasion. They must be made strictly to follow the course of treatment that will render them non-infectious: generally, 60 to 70 injections administered over a period of 12 to 18 months.

THE RESULTS TO BE EXPECTED FROM ANTIVENEREAL LEGISLATION

Any program outlined to combat syphilis applies incidentally to gonorrhoea and may be summarized in two articles:

1. Detect syphilis in its infectious period, which begins with the initial chancre and lasts 3 or 4 years; and test for syphilis every pregnant woman.

2. Apply without delay the minimum of treatment that will permanently eliminate all danger of infection and prevent congenital syphilis.

The epidemiological methods employed for detecting other infectious diseases may be applied to syphilis (safeguarding, however, the confidential nature of the relations between the physician and his client), and the efficacy of these methods in syphilis is undeniable. In New Jersey the average of new cases traced by epidemiological investigation has been in the ratio of 1 to every 3 syphilitics coming for consultation.

With the aid of the investigator, a nurse or physician, the examination of the blood is the essential means for detecting syphilis. During the past twenty years there has been an effort, not unattended by success, toward a more general employment of the blood test, as testified by the constant increase in the number of serological examinations done in the laboratory of the Ministry of Health. This examination is now made routinely in hospitals and clinics, but it is important to have it required by law, in order to prevent conjugal syphilis and congenital syphilis. These two modes of transmission are responsible for half of all infections, a fact which proves that syphilis strikes the just as well as the unjust.

According to the information that we have secured from the Public Health Service of the United States, as of March 20, 1940, blood examination before marriage is required in

twenty states and from pregnant women in seventeen states.

Marriage cannot be authorized as long as the syphilis of either party is infectious. And the treatment of syphilitic women during gestation will prevent, in 9 cases out of 10, the disastrous consequences of hereditary syphilis in the child; whereas if treatment is withheld, at most only 16 per cent of these women will give birth to children free from syphilitic symptoms, without counting abortions.

Legislation and social service are just as necessary for ensuring the treatment of syphilitics as for detecting their infections. The experience of the Scandinavian countries and of the United States has demonstrated that, with the support of legislation, it is possible to keep under treatment, for at least one year, 80 per cent of infectious syphilitics, whereas at most 17 per cent of these patients complete their treatment when left to themselves. And it is the youngest patients (from 16 to 31 years), consequently the most dangerous, who are the more unlikely to give their full co-operation.

In order to have these patients follow the treatment that will render them non-infectious, it has been demonstrated that it is usually necessary merely to inform them of the existence of regulations and sanctions which may be imposed upon them. Reports from Ontario (1939) indicate that for 1,169 cases of negligence or infraction of regulations brought to the attention of the medical officers, there were necessary only 132 summonses (11 per cent) and 57 legal actions (less than 5 per cent).

Since legislation concerning venereal diseases is of recent date in most of the states and provinces we have not yet sufficient information completely to evaluate the beneficial results to be derived therefrom, but they are already manifest. Thus in Ontario it has been found that in one group the syphilis rate has dropped from 5 to 1.5 per cent in the course of the last five years.

ECONOMIC AND SOCIAL ASPECTS OF SYPHILIS

The importance of enlisting legislation and any other means that may be of aid in combating venereal diseases is very evident when one considers the immediate or ultimate consequences of these diseases upon the individual and society.

As a cause of death syphilis holds first place, with tuberculosis and pneumonia, in the domain of infectious disease. Further, it is often unrecognized in its final consequences because of the insidious forms that it may assume. By thus cutting short human life syphilis is responsible for a heavy economic loss; but it causes an even greater loss by incapacitating for various lengths of time and in various degrees 33 per cent of those infected.

In its cardio-vascular form syphilis attacks more than one person in every thousand. It is involved in 10 to 12 per cent of all heart diseases, and, according to actuaries, shortens the life of its victim by twenty-two years.

Of all the patients admitted into hospitals for the insane 10 per cent are brought there by paralytic insanity (general paresis) which is one of the results of nervous syphilis.

Half of the children born blind are victims of hereditary syphilis, and 15 per cent of all cases of blindness are the result of syphilis.

If to these complications are added the liver and kidney troubles due to syphilis, deafness, paralysis, and other nervous degenerations, the total is such that one may readily understand why the cost of syphilis represents a considerable proportion of the expense entailed for the maintenance of our lunatic asylums, refuges, orphan asylums, etc. We must also take into account the loss of revenue caused the patient because of his incapacity.

As a result of an inquiry into the cost of syphilis in the City of Montreal, Cormia concludes that the expense to the taxpayer of hospitalization, of treatment in clinics, and of laboratory service amounts to a total each year of \$355,000. Moore, in 1935, noted that the City of St. Louis, with a population practically that of Montreal, was spending each year \$600,000 to \$1,000,000 for venereal diseases, principally syphilis, in addition to the \$1,500,000 spent by the patients and charitable organizations for medical fees and hospital expenses.

Besides burdening the budgets of individuals, of municipalities and provinces, syphilis, especially in its hereditary form, also reduces the value of the individual to society. Interstitial keratitis, for example, which afflicts 25 per cent of victims of hereditary syphilis, although it is usually cured by treatment, may so retard a child's education as gravely to affect his social activities and waste his intellectual energy.

Finally, syphilis often produces, in those afflicted by hereditary syphilis, lesions of the brain, of the organs and of the endocrine glands, slight but nevertheless sufficient to render youths lazy, unbearable, thieving, doleful, and sickly; these victims fill our children's hospitals and, thrown upon society, become weaklings destined to degeneracy and immorality, sometimes even to crime.

CONCLUSION

There is no doubt that, despite the measures employed at present in this province to combat syphilis, including laboratory service, provision of clinics, distribution of medicaments and educational propaganda, the incidence of syphilis among our people is increasing. Further measures must be applied if we are to prevent an even greater loss of human life and economic resources, because of this scourge, than that which we now suffer.

The crux of the whole problem is that of inducing the infectious syphilitic to begin and follow to completion proper treatment of his infection; and, to solve it, the other provinces and all the states of the American Union have

added to their equipment an appropriate legislation. Since such legislation has been shown to be efficacious, without causing undue hardship to the victims of this dread disease, adoption of similar legislation for our province is imperative.

Men and Books

NATURAL PHILOSOPHY DURING THE REIGN OF KING CHARLES THE SECOND*

BY ALBERT G. NICHOLLS

Montreal

Some of my hearers, at least at first, may entertain a feeling of surprise and a sense of incongruity that I have associated so serious a subject as "Natural Philosophy" with the name of "The Merry Monarch". I plead justification. Backgrounds and contrasts are oftentimes illuminating. It is true that His Sacred Majesty is more commonly known to fame for his investigations into a certain aspect of biology which did him little credit, but there is evidence to show that his interest in natural phenomena had a wider range than this, and that he took a genuine, if somewhat languid, interest in what was called "Natural Philosophy", a term which then included experimental science generally. Without overlooking the claims of William Harvey, it may be said, I think truthfully, that it was only with the advent of Charles the Second that the experimental method, at least in medicine, came into its own and during his reign were established securely the principles on which modern medicine has been built.

In passing, it may be recalled that Canada has, perhaps, more than an academic interest in this particular period of history. One of its Governors-General, the fourth Duke of Richmond, Lennox, and Aubigny, who died in 1819 of hydrophobia contracted from the bite of a fox, lies buried in the Cathedral of the Holy Trinity in Quebec. He was a descendant of Charles Fitzroy, an illegitimate son of Charles by Louise Renée de Keroualles, Duchesse d'Aubigny, created later Duchess of Portsmouth.

Some idea as to King Charles and his times may be gleaned from the testimony of certain of his contemporaries. For instance, John Evelyn, the diarist, who knew the King and the court intimately, has this to say:—"He was a Prince of many virtues and many great imperfections; debonaire, easy of access, not bloody nor cruel; his countenance fierce, his voice great, proper of person, every motion became him; a lover of the sea and skilful in

shipping; not affecting other studies, yet he had a laboratory, and knew of many empirical medicines and the easier mechanical mathematics; he lov'd planting and building, which passed to luxury and intolerable expence. . . . The history of his reign will certainly be the most wonderful for the variety of matter and accidents, above any extant in former ages: the sad tragical death of his father, his banishment and hardships, his miraculous restauration, conspiracies against him, parliaments, wars, plagues, fires, comets, revolutions abroad happening in his time, with a thousand other particulars."

The reign of Charles the Second was picturesque beyond question, but for most of us, I doubt not, our acquaintance with it is chiefly derived from those delightful *chronicles scandal-euses*, Pepys' Diary and the Mémoires of the Comte de Grammont. The other side of the picture is not so familiar—the important place that experimental science attained during this period. The advance in this particular was the more remarkable when, as we have to admit, the flower was growing in such congenial soil.

King Charles the Second came to the throne in 1660 and died in 1685. Twenty-five years is sufficient time to assess with some accuracy the trend of events, whether in politics, religion, social life, or natural science. In the first of these spheres the government of Charles was a disgrace. Under him the good name of England at home and abroad was brought to a new low. Profligacy, luxury and wastefulness were the rule. This had certainly not been the case under the Parliamentarians. With regard to Medicine his reign was preeminently the era of cults, "isms", traditions, prejudices, quackery, bleeding, and polypharmacy. Never had the practice of our art been so fussy, so irrational, and so inept. Medical men were wedded to their idols and seemed to think it their duty to proclaim their principles vociferously. The King himself and others in high positions encouraged quackery. Elias Ashmole, the distinguished antiquary writes:—"I this day mov'd my Lord Archbishop of Canterbury for a licence for Mr. Lilly, the astrologer, to practise physick, which he granted." The redeeming feature of the reign, however, despite all this welter, was the galaxy of enquiring men looking into the phenomena of Nature, not a few of whom attained immortality. Towards the work of these the King was surprisingly sympathetic.

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and his interest did much to advance their aims. For this he should receive praise.

Some three hundred and fifty years before this a Franciscan friar, a professor at Oxford, Roger Bacon by name, wrote thus:—"Experimental science has three great prerogatives over other sciences; it verifies conclusions by direct experiment; it discovers truth which they never otherwise would reach; it investigates the course of Nature and opens to us a knowledge of the past and future." Essentially modern, this, but these conceptions were lost for the time amid the speculations of the Schoolmen. Bacon's ideas certainly did not make any progress in the face of the philosophic acrobatics of his day. With the Renaissance, however, came a change. Men's attention was focussed anew on the original founts of knowledge. Tradition was discarded and a new outlook (the old outlook of Bacon, in truth) was established in regard to natural phenomena. The movement quietly gained momentum and was well under way during the sixteenth and seventeenth centuries. Paracelsus, Vesalius, and Harvey were its protagonists.

Let us now trace, very sketchily, the course of events leading up to the period we specially have under review. In the first year of the seventeenth century William Gilbert, physician to Queen Elizabeth, published his observations on terrestrial magnetism (*De Magnete*) which are a splendid exposition of the experimental method. In this work he laid the foundation of the inductive line of reasoning years before Lord Bacon, who, however, usually gets the credit for it. Galileo invented the telescope in 1609; Kepler enumerated the laws governing planetary motion in 1609-18; Napier invented logarithms in 1614; Harvey published his "*De Motu Cordis*" in 1628, though he had been teaching his particular views on the circulation for years before; Descartes founded analytical geometry in 1637; von Guericke invented the air-pump in 1641; and Torricelli the barometer in 1643. All these discoveries of the first half of the seventeenth century, be it noted, are concerned with physics and mathematics, with one exception, the work of Harvey. Certain other notable work was being done about this time on the Continent and in England by such men as Highmore, Glisson, and Wharton which dealt with anatomical and histological subjects, but, while these dealt with topics ancillary to medicine, they did not exemplify the experimental method. However, they prove, at least, if further proof were needed, that the spirit of investigation was in the air. Harvey's good work was not generally accepted for many years, but when at last it was appreciated it was in England, and in the reign of Charles the Second, that his inspiration found disciples.

We have evidence to show that in England the new leaven of the Renaissance had been working for some years. About the middle of the seventeenth century, despite the troubled

nature of the times, for it was the period of the struggle between King and Parliament, some scientific enquiry had been going on. Under the circumstances, we wonder why and how. The urge must have been great. We learn that in 1645 and onward weekly meetings were held in London of "divers worthy persons inquisitive into natural philosophy and particularly what hath been called the New Philosophy or Experimental Philosophy". Some of these "philosophers" formed an association in Oxford also, about 1648, under the title of "The Philosophical Society of Oxford", which used to meet in the rooms of Dr. Wilkins, Warden of Wadham College. Among the notable men resident in Oxford at that time was William Harvey, who, though his mere presence may have been an inspiration, could hardly have taken an active part in the proceedings, for he was evicted from his office of Warden of Merton College by the Parliamentarians in 1648. Others there at that time who should be mentioned were John Evelyn, Robert Boyle, and Robert Hooke, of whom more later. The two Societies kept up close relations and were soon merged, meeting in London at Gresham College.

It seems that in these early days at Oxford Evelyn had conceived the idea of forming a larger, more influential, society and had communicated his thought to Boyle. The matter rested, however, until 1660, when the first steps were taken to this end on the initiative of these two enthusiasts. King Charles became interested and offered, in October, 1661, to be entered as one of the members. In 1662 he granted a charter and the Society was incorporated under the name of "The Royal Society of London for Improving Natural Knowledge". The King, it is said, occasionally attended the meetings and proposed "posers".

A reference to the Transactions, which first appeared a few years later, shows that the time of the new organization was at first taken up with miscellaneous observations, strange occurrences, climatological and astronomical questions, geometrical and mechanical problems, unusual medical cases, autopsies, and experimental observations of many kinds. Medicine, and particularly research medicine, received a considerable share of attention. The example set by Harvey was followed up with enthusiasm, and at last physiology came into its own. The relations between the Royal Society and the savants of the Continent, also, were close and friendly, and much correspondence went on between them. Antonj van Leeuwenhoek, of Delft, was particularly active, and sent innumerable letters and no less than 375 scientific papers to the Society.

The reception of the new scientific body by the "regular" medical practitioners of London was certainly not cordial. The members were accused of favouring quackery(!), and were scornfully referred to as "The Virtuosi". Of course, as they based their studies on correct

principles, they eventually won out, as we should expect.

I have not seen a very early list of the Fellows of the Royal Society, but a ballot roll for 1671 shows that at that time there were 222 members, of whom 32 were Doctors of Medicine, or if we include Hooke 33. Though hardly a physician in the proper sense of that term Hooke may, possibly, be included, for we find that, eventually, in 1691, he took the oath for the degree of Doctor of Physic before Sir Charles Hedges.

Some of the names on the list are famous—Elias Ashmole, the antiquary; John Aubry, John Evelyn, and Samuel Pepys, the diarists; Robert Boyle, the physicist; John Locke, physician and philosopher; Christopher Wren, astronomer and architect; Francis Glisson, Nehemiah Grew, Edmund King, Richard Lower, Marcello Malpighi, Walter Needham, and Thomas Willis, physicians. Among the foundation members was the Hon. Robert Boyle, son of the first Earl of Cork, who, while he did not contribute any great discovery, unless we rate "Boyle's Law" as such, did much to enhance the fruitfulness of the experimental method, in which effort he was actively supported by Locke. Boyle's researches were often indirectly of value to medicine.

A few insufficient words are all we can afford here to show the calibre of some of these worthies, and, in the main, these remarks will be restricted to those of them who have a medical interest. First, however, we would call attention to a remarkable fact, namely, that men of widely different training and callings were interested in each other's work and often collaborated. Indeed, we feel that the members of the Royal Society at this time constituted one large family.

We begin with Sir Christopher Wren. His own fields were astronomy, mathematics, and architecture, but he was also interested in anatomy and medicine. Assisted by Boyle and Wilkins, he was the first to attempt the administration of drugs by the intravenous method, injecting opium and crocus metallorum into the veins of dogs. He helped Willis with his studies on the brain and nervous system, and drew the splendid illustrations that adorn the latter's great work, the "*Cerebri Anatome Nervorumque Descriptio et Usus*".

Thomas Willis, one time Professor of Natural Philosophy at Oxford, moved to London in 1666, where he soon acquired a large and fashionable practice. He was a man of outstanding ability. As a clinician he was unsurpassed for his time. He established the basic principle for distinguishing between diabetes mellitus and diabetes insipidus; he described myasthenia gravis; he gave the first account of typhoid fever as he met with it among the troops during the Civil War; he described dementia paralytica, and was the first to describe and name puerperal fever. He also seems to have grasped, though in a vague

way, the idea of metabolism. As a research worker his name is associated with "the circle of Willis" and the spinal accessory nerve (nerve of Willis); he classified the cranial nerves; and he described the phenomenon known as "paracismus Willisii".

Richard Lower was another distinguished figure of the time, though he does not seem to have received the full meed of credit to which he is entitled. A friend of Willis, he helped him greatly with his research work during his Oxford period. He was a careful experimenter, an accurate observer, and in all respects a worthy follower of Harvey.

The blood was attracting much attention at this time. Lower dealt not only with such matters as the motion, colour, and coagulation of the blood but with the heart as well. He estimated the blood-pressure, calculated the amount of blood discharged at each systole and the velocity of the blood-flow in the arteries. In fact, he initiated research into some of the most fundamental problems of hæmodynamics. Anatomists will, of course, remember the "tubercle of Lower" (*Tractatus de Corde*, 1669).

Blood transfusion had also a widespread interest at this time, and is referred to more than once in Pepys' Diary. Lower was the first to perform direct transfusion of blood from one animal to another (1665). Denys was the first to transfuse in man (1667), and a few months later in the same year Lower performed the operation on Arthur Coga before the Royal Society. I believe he used sheep's blood. The patient did not die!

Like Willis, Lower had a large and fashionable practice, but his seriousness and honesty of purpose proved his undoing. It is related that he joined the Whig party in 1678, thinking it would carry all before it, but, being mistaken, he lost the patronage of the King and, consequently, his practice. Lower was also a stout Protestant and troubled not to conceal his predilections at every visit he made. He called very often on Nell Gwynne, and was so successful in learning from her all the intrigues of the Court that the King himself used to complain of him, and said that he did him more mischief than a troop of horse!

Among those who studied the coagulation of the blood were Walter Needham and Richard Wiseman, and many others were interested in the blood and circulation as related to respiration.

Van Leeuwenhoek, the Dutchman, was the first to describe in detail the red corpuscles of the blood (previously seen, however, by Swammerdam and Malpighi). His monograph on the subject was presented to the Royal Society in 1673, and it is said to have shaken that august body to its foundations. In it occur these words:—"I have divers times endeavoured to see and to know what parts the blood consists of; and at length have observed, taking some

Blood out of my own hand, that it consists of small round globules driven through a crystalline humidity or water: Yet, whether all Blood be such I doubt, and exhibiting my Blood to myself in very small parcels, the globuls yielded very little colour."

Up to the time of Harvey the Galenic teaching, that the object of respiration was to cool the fiery heart, held universal sway. As Sir Clifford Allbutt strikingly put it, "Before Harvey's time respiration was regarded not as a means of combustion but of refrigeration. How man became such a fiery dragon was the puzzle." The object of the movement of the chest was to introduce air for generating "vital spirits" by the pulmonary vein and to eliminate the heart's "smoky vapours" by the same channel. Harvey's demonstration that the blood is changed from venous to arterial in the lungs was the forerunner of much brilliant investigation, in which, until the time of Lavoisier English scientists played the leading rôle. The successive steps in what Allbutt calls "the pathetic quest for oxygen" we shall now endeavour to trace.

One of the earliest to essay the experimental method in this direction was the Hon. Robert Boyle. He was particularly interested in the study of the air and various gases, and some of his work bears directly on the subject of respiration. One classical experiment of his was to place a bird or other small animal under a bell jar and exhaust the air by means of a vacuum pump. He found that when the air had been removed for a sufficient length of time the animal began to feel ill, giddy, and weak, and developed more or less violent convulsions. It revived when air was allowed to re-enter. If the animal was deprived of air for a sufficient length of time it died. This proved that the air or some component thereof is essential for life.

In 1667 Robert Hooke, a former assistant of Boyle's at Oxford, repeating an experiment of Vesalius' before the Royal Society, opened the thorax of a dog, and by blowing briskly with a bellows over the surface of the lung showed that it was possible to keep the animal alive without any movement of the chest or lungs. This proved that the essential feature in respiration lies not in movement but in changes in the blood.

The next advance was made by Richard Lower about 1669. The difference in colour between arterial and venous blood had, of course, been noticed centuries before, but the alteration was attributed to a sort of combustion taking place in the heart. Lower noted the greater brightness or redness in the upper part of a blood clot and attributed it to its correct cause, the action of the air. He also observed that a black clot became bright red when broken up and exposed to the air. He suspected, too, that a similar change in colour

was effected as the blood passed through the lungs.

To prove this he repeated an experiment of Hooke's, to wit, exposing the heart of a dog and keeping up artificial respiration. He observed that the blood in the pulmonary vein was scarlet before it reached the heart; if the inflation of the lungs by a bellows was interrupted the blood in this vein became dark and venous. He perfused venous blood through the lungs and noted that so long as the lungs were kept inflated the blood flowed out of the veins scarlet in colour; on the other hand, if no fresh air were blown into the lungs, or if the lungs were kept distended with the same air, the blood flowed out unchanged. He concluded, therefore, that the change in question was effected in the capillaries of the lungs and was due to the action of the air. He believed, in fact, that the blood took up some of the air.

Another great, perhaps the greatest, figure in the development of our story is John Mayow, who was born in London in 1643 and died in "the joyous neighbourhood" of Covent Garden at the untimely age of thirty-six, having accomplished much. He took his degree in Law, not in Medicine, at Oxford, and was only twenty-five years of age when his epoch-making work was published. This is entitled "*Tractatus de Sale Nitro et Spiritu Nitro-æreo, de Respiratione, Respiratione Fœtus in Utero et Ovo, de Motu Musculari et Spiritibus Animalibus; de Rachitide.*" Mayow knew that the heart was muscular and that the blood was forced out in systole, and he fully appreciated the mechanism by which air entered the lungs. He regarded the increase in the capacity of the chest during inspiration as due to the raising of the ribs and the lowering of the diaphragm. In his opinion expiration is passive.

But it is with the chemical aspect of the problem that Mayow's name is chiefly associated. He proved that it was not merely a proportion of the air that is essential for combustion and respiration but a particular constituent of it which he called *sal nitro-æreum*, *spiritus nitro-æreus* or *igneo-æreus*. This was in fact the gas that we now call oxygen, though it was not isolated as such until more than a hundred years later. Mayow proved also that the change in the colour of the blood previously referred to was due to its taking up this *spiritus æreus*. He fully grasped the idea that the object of breathing is to effect an interchange of gases between the blood and the air and to eliminate effete matters from the former.

We pass on now to speak of quite a different sort of personage, if only to point a contrast. Hooke has this entry in his diary under date of June 8, 1675,—"Rode to Acton with Dr. Siddenham, did me good, he invited me to stay with him 6 weeks. Told me of his book. Discoursed with me of Physick, Religion, philosophy. Told me of Marsham and many other books." And again, January 7, 1678/9,—

"Sat with Dr. Siddenham and discoursed of System of the World." The subjects about which these two eminent, but so different, men talked betray something of the mental make-up of one of them at least.

Sydenham practised in London during the period we have under review, and must have known most of his great contemporaries. He is said to have been particularly friendly with Boyle and Locke. Yet he was not of their breed. He was not a Fellow of the Royal Society, and, as he thought scorn of scientific experimentation, he probably did not miss the honour. With his particular views, indeed, he could hardly have clicked with "The Virtuosi", and, on the other hand, as he despised the theorizing of the "regulars", the Galenists and the Paracelsians, he could hardly have been popular with either of them. In addition, he had been a captain of horse on the side of the Parliamentarians and so was on the unpopular side of politics. He was indeed a "lone eagle". His personal attitude towards his medical contemporaries seems to have been indifferent, even disdainful.

Sydenham's working system was simple. The human mind is fallible and limited. Therefore final causes must remain inscrutable. Theory is of little value to the practitioner, who must rely on his powers of observation and his store of experience. As illustrating his type of mind, we may repeat this story which has been told of him. When Sir Richard Blackmore asked him to recommend a good book to use as a textbook of medicine, he replied,—"Don Quixote. It is a good book; I read it still". Another capital story is this. The young Hans Sloane (later to become Sir Hans and a noted physician) on his arrival in London waited on Sydenham and presented a letter of recommendation from a friend setting forth his qualifications in glowing terms—"He was a ripe scholar—a good botanist—a skilful anatomist." After Sydenham had perused this eulogy and had eyed the tyro attentively, he said,—"All this is mighty fine, but it won't do. Anatomy—botany—nonsense. Sir, I know an old woman in Covent Garden who understands botany better; and, as for anatomy, my butcher can dissect a joint full as well:—No, young man, all this is stuff; you must go to the bedside; it is there you can alone learn disease."

For his time, Sydenham was a clinician of the first order, and enobled the practice of medicine by those qualities of piety, good humour, and good sense which Edmund Burke declared to be of the genius of the English race. Yet, his mind, though strong and practical, was narrow, dogmatic, and unreceptive. Apparently he was unimpressed by the important work that was going on about him. In 1683, alluding to Harvey and the experimental school, he said,—"We may know the larger organs of the body, but its minute structure will always be hidden from us. No microscope will ever show us the

minute passages by which the chyle leaves the intestines or by which the blood passes from the arteries to the veins." Here Sydenham was not up to date, for Malpighi, twenty-five years before, had discovered the capillaries of the lung with the aid of the despised microscope, thus contributing the final link in the chain of evidence that Harvey had forged; and only five years after his *ex cathedra* pronouncement had been made van Leeuwenhoek discovered the capillaries of the general vascular system. So dangerous is it to prophesy in connection with a progressive natural science!

We pass on, in conclusion, to consider one who for assiduity, fertility of ideas, and versatility was not approached, not to say surpassed, by any of his contemporaries. In fact, he might be termed without exaggeration at once the compendium and epitome of them all. A paradox, yet true.

Pepys in his diary (February 15, 1664-65) mentions a club supper at which "above all Mr. Boyle was at the meeting and above him was Mr. Hooke, who is the most and promises least of any man in the world that ever I saw." The diarist here seems to hint at the incongruity of a giant intellect being housed in a dwarfish and deformed body.

Robert Hooke (1635-1703), for years the secretary of the Royal Society, deserves a treatise to himself. His industry and accomplishments were wellnigh incredible. He was early appointed curator of the Royal Society, his special duty being to perform experiments, and so extraordinary was his ability that for several years he was able to demonstrate discoveries at every meeting. John Evelyn has an entry in his diary (August 4, 1665) which records his opinion of Hooke's capacity. Two others, both distinguished men, share the diarist's good opinion. "I called at Durdans, where I found Dr. Wilkins, Sir William Petty, and Mr. Hooke contriving chariots, new rigging for ships, a wheele for one to run races in, and other mechanical inventions; perhaps three such persons were not to be found elsewhere in Europe for parts and ingenuity."

Hooke has been termed "The Father of Microscopy". His "Micrographia" (1665) contains the first histological description of the structure of plants. It has been said that we owe the concept of and the term "cell" to Hooke. This work probably inspired Grew to produce his studies on vegetable histology, in which he was the first to enunciate the idea of sex in plants.

Space is lacking for us even to mention the many subjects that interested Hooke. He constructed the first Gregorian telescope; he was the first to assert the true principle of the arch; he devised a system of telegraphy; he invented the marine barometer; he discovered a fifth star in Orion; he was a talented architect. The list is almost endless. Somehow he reminds us of Leonardo da Vinci. Though

prolific in ideas, he, unfortunately, did not always carry them out to a final demonstration. He did not have sufficient time and his health was poor.

Hooke had a dwarfed, crooked, ungainly figure and a warped outlook. He is said to have been miserly, crabbed, jealous, vain, and morbid. May we not put this down, charitably, to eccentricity of genius and to ill health, for he was a sad sufferer. In spite of his handicaps he actually did make about half of the discoveries of his time; and he laid claim to the other half! When Newton was preparing his "Principia" Hooke accused him of stealing some of the ideas from himself. Accordingly, the former determined to suppress about one-third of the work, and was with difficulty dissuaded from his purpose. Later, too, when Newton had completed his "Optics" he found that Hooke had claims against this also. So he kept his work in manuscript until Hooke was dead. Certainly, Hooke was a stormy petrel. Nevertheless, he was great beyond question.

Dr. R. T. Gunther, of Magdalen College, Oxford, writing to *The Times* on the occasion of the celebration of the tercentenary of Hooke's birth, points out in striking fashion the indebtedness of our age to Hooke. He said,—“It was his air pump, made in the Oxford High Street, that was the prototype of the atmospheric engine of Newcomen, which in its turn was the progenitor of the steam-engines of Watt and Stephenson and all that they produced. The principle outcome has been speed—speed of travel and transport, speed of production, speed of manufacture. Speed, rightly used, means leisure for civilization. But Hooke's great work went farther. His basic inventions have also made speed safe; for to him we owe means for the accurate measurement of weather, time and longitude. His anchor-escapement brought about a revolution in clock making; his balance spring, still living in our wrist watches, yielded chronometers which have given the sailor such sure knowledge of his position that he can now approach unseen land at speed and without risk. Hooke's discovery of the Law of Springiness, *ut tensio si vis*, forms the basis of the theory of elasticity used by engineers in every form of design. "Hooke's Joint" is an essential link in the transmission gear of many cars; and many other instances might be quoted of the benefits to civilization which had their origin in the fertile, restless brain of this three-hundred-year old Father of the Industrial Age." More might be said, also.

May we not justly conclude that the reign of Charles the Second, despite grievous shortcomings, was largely redeemed by the fact that during his time a body of earnest and capable men existed, who, notwithstanding the distractions of political, social, and religious unrest, war, pestilence, and fire, were able to make

fundamental discoveries in so many branches of natural philosophy and to establish the principles on which research in medicine, in particular, depends for all time?

Association Notes

Our Newest Medical Society

A few weeks ago we were advised of the formation overseas of the First Canadian Division Medical Society. The Society wished to know if it might be regarded as an affiliated branch of the Canadian Medical Association. The request was most favourably received by the Executive Committee and affiliation has been granted.

We are now pleased to publish hereunder the Minutes of the first meeting of this society. We feel sure the account will be read with interest and that the membership of the Association as a whole will wish the Society all success.

The Medical Officers of the First Canadian Division assembled at an old Priory in the south east of England on the afternoon of October 8, 1940. The building which stood on the crest of a ridge among tall stately trees and decorative shrubs, was of Norman design and constructed of stone. The Main Dressing Station for the area was located at this place and it served as a link in the chain of evacuation of casualties to the Canadian General Hospitals in England.

This meeting had been called for the purpose of forming a Medical Society within the Division. The object in view was to keep everyone informed concerning advances in military medicine and surgery, and, further, to maintain their interest in civilian medicine that they might the more readily resume active private practice at the conclusion of their war service.

Those present at the first meeting of the society were: Col. E. A. McCusker, M.C.; Lt.-Colonels H. M. Elder, G. R. D. Farmer, G. E. McCartney; Majors C. V. Mulligan, M.B.E., E.D., K. I. Conover, E.D., J. Boyd, G. A. Sinclair, C. H. Playfair, F. B. Bowman, C. G. Gossage, K. A. Hamilton, C. V. Ward, G. E. Wright, G. M. Fraser; Captains J. E. Andrews, J. K. Bell, C. E. Holmes, G. J. McCarroll, J. P. McInerney, I. C. Clendinnen, T. C. Gibson, L. P. Robert, G. C. McGarry, J. Benaron, J. D. McIntosh, B. A. McLeod, H. T. Ewart, R. H. Stevenson, V. F. Ogulnik, J. A. Bradshaw, F. J. Argue, C. E. Corrigan, H. A. Robertson, C. V. Letourneau, H. C. Johnston, G. S. Long, E. D. Rathbone, C. E. Baker, A. S. Middlebro, W. E. Glass, J. H. Negru, D. W. Sparling, D. A. Young, D. W. Smaill, J. S. Miller; Lieut. J. A. Truax.

A nominating committee proposed a slate of officers who were unanimously elected. Colonel E. A. McCusker, M.C., A.D.M.S., 1st Canadian Division, was elected the first *President* of the Society. Lt.-Colonel H. M. Elder, O.C., 9th Canadian Field Ambulance, is *Vice-president* and Major Gordon A. Sinclair, D.A.D.M.S., 1st Canadian Division, will act as *Secretary-treasurer*. A program committee consisting of Lt.-Colonel H. M. Elder, Major C. D. Gossage and Captain J. E. Andrews was formed.

The President, Colonel McCusker, thanked the meeting for the honour that had been done him and then called on the guest-speaker, Major I. M. Rabinowitch, to give the inaugural lecture of the society.

Major Rabinowitch gave a graphic description of the action and uses of the common war gasses, and clearly

outlined the recent advances in first aid measures for each gas. Most opportunely, a reply from a telegram to Canada was received at this juncture. It was from the General Secretary of the Canadian Medical Association and read as follows: "Congratulations and greetings First Canadian Division Medical Society. Canadian Medical Association delighted to recognize you." Everyone felt that this confirmation of affiliation with the national association augured well for the development and success of our Overseas Branch.

The meeting then adjourned to meet again in one month. Tea was served and an opportunity was eagerly seized by medical officers to discuss informally medical problems with their fellows before returning to their various units.

GORDON A. SINCLAIR, *Secretary-treasurer.*

The Winnipeg Meeting, June 23 to 27, 1941

The Central Program Committee is now engaged in preparing the program for the annual meeting. Any member of the Association who wishes to present a paper is invited to forward the title with a short abstract to the General Secretary, 184 College Street, Toronto, not later than January 31, 1941.

T. C. ROUTLEY,
General Secretary.

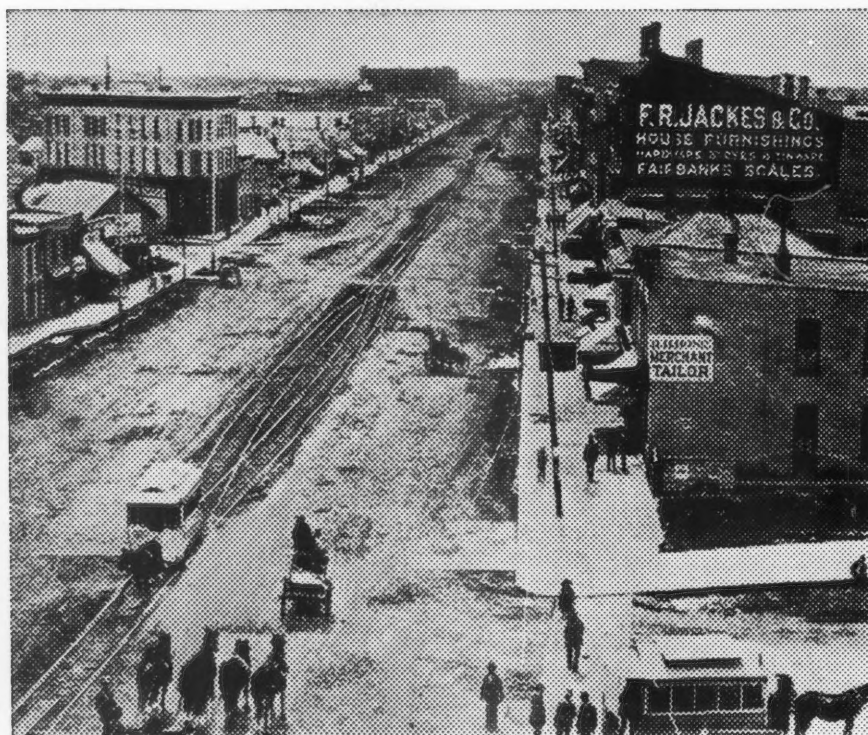
CANADIAN MEDICAL ASSOCIATION CONVENTION, Winnipeg, June, 1941

Spend your tourist
money in Winnipeg

Protection from
Indians guaranteed

Western costumes
not essential

North West Mounted Police
protection on request



MAIN STREET — looking south

All firearms must
be registered

Buy Winnipeg real-estate

Shooting on streets
after dark prohibited

Pemmican and firewater
at reasonable prices

Buffalo within a day's
march of the city

An ample food supply
is guaranteed

Come and see where
the West begins

Editor's note.—We observe with regret that the Publicity Committee has become disorientated by about sixty years. This will be corrected by June.

Dominion Income Tax Returns by Members of the Medical Profession

The following memorandum dealing with Dominion Income Tax payable by members of the medical profession supersedes all other memoranda previously published on this subject and should be read carefully by members of the medical profession before preparing and submitting their Income Tax Returns for the year 1940.

As a matter of guidance to the medical profession and to bring about a greater uniformity in the data to be furnished to the Income Tax Division of the Department of National Revenue in the annual Income Tax Returns to be filed the following matters are set out.

1. *Income*.—There should be maintained by the doctor an accurate record of income received, both as fees from his profession and by way of investment income. The record should be clear and capable of being readily checked against the return filed. It may be maintained on cards or in books kept for the purposes.

2. *Expenses*.—Under the heading of expenses the following accounts should be maintained and records kept available for checking purposes in support of charges made:

- (a) Medical, surgical and like supplies;
- (b) Office help, nurse, maid, and bookkeeper; laundry and malpractice insurance premiums. (It is to be noted that the Income War Tax Act does not allow as a deduction a salary paid by a husband to a wife or vice versa. Such amount if paid, is to be added back to the income);
- (c) Telephone expenses;
- (d) Assistants' fees;
The names and addresses of the assistants to whom fees are paid should be furnished. This information is to be given each year on or before the last day of February on Income Tax Form known as Form T.4, obtainable from the Inspector of Income Tax. (Do not confuse with individual return of income, Form T.1, to be filed on or before 30th April in each year);
- (e) Rentals paid;
The name and address of the owner (preferably) or agent of the rented premises should be furnished [see (j)];
- (f) Postage and stationery;
- (g) Depreciation on medical equipment;
The following rates will be allowed provided the total depreciation already charged off has not already extinguished the asset value:—

Instruments.—Instruments costing \$50 or under may be taken as an expense and charged off in the year of purchase;

Instruments costing over \$50 are not to be charged off as an expense in the year of purchase but are to be capitalized and charged off rateably over the estimated life of the instrument at depreciation rates of 15 per cent to 25 per cent, as may be determined between the practitioner and the Division according to the character of the instrument, but whatever rate is determined upon will be consistently adhered to;

Library.—The cost of new books will be allowed as a charge.

Office furniture and fixtures.—Ten per cent per annum.

- (h) Depreciation on motor cars on cost;
 - Twenty per cent 1st year;
 - Twenty per cent 2nd year;
 - Twenty per cent 3rd year;
 - Twenty per cent 4th year;
 - Twenty per cent 5th year;

For 1940 and subsequent years the maximum cost of motor car on which depreciation will be allowed is \$1,800.

The allowance is restricted to the car used in professional practice and does not apply to cars for personal use.

- (i) Automobile expense (one car);
This account will include cost of licence, oil, gasoline, grease, insurance, washing, garage charges and repairs; (alternative to (h) and (i) for 1940 and subsequent years). In lieu of all the foregoing expenses including depreciation there may be allowed a charge of 4½¢ a mile for mileage covered in the performance of profession duties. Where the car is not used solely for the purpose of earning income the maximum mileage which will be admitted as pertaining to the earning of income will be 75 per cent of total mileage for the year under consideration.

For 1940 and subsequent years where a chauffeur is employed partly for business purposes, and partly for private purposes, only such proportion of the remuneration of the chauffeur shall be allowed as pertains to the earning of income.

- (j) Proportional expenses of doctors practising from their residence—
 - (a) Owned by the doctor;
 - (b) Rented by the doctor.
 - (a) Where a doctor practises from a house which he owns and as well resides in, a proportionate allowance of house expenses will be given for the study, laboratory, office and waiting room space, on the basis that

this space bears to the total space of the residence. The charges cover taxes, light, heat, insurance, repairs, depreciation and interest on mortgage (name and address of mortgagee to be stated);

- (b) Rented premises.—The rent only will be apportioned, inasmuch as the owner of the premises takes care of all other expenses.

The above allowances will not exceed one-third of the total house expenses or rental unless it can be shown that a greater allowance should be made for professional purposes.

- (k) Sundry expenses (not otherwise classified)—

The expenses charged to this account shall be capable of analysis and supported by records.

Claims for donations paid to charitable organizations will be allowed up to 10 per cent of the net income and for patriotic donations up to 50 per cent of the net income both upon submission of receipts to the Inspector of Income Tax.

The annual dues paid to governing bodies under which authority to practice is issued and membership association fees not exceeding \$100 to be recorded on the return, will be admitted as a charge.

The cost of attending post-graduate courses or medical conventions will not be allowed.

- (l) Carrying charges;

The charges for interest paid on money borrowed against securities pledged as collateral security may only be charged against the income from investments and not against professional income.

- (m) Business tax will be allowed as an expense but Dominion, Provincial or Municipal income tax will not be allowed.

3. *Professional men under salary contract.*—For 1939 and subsequent years the salary of professional men will be taxed in full without any deductions other than those specified in the Income War Tax Act such as charitable and patriotic donations and payments to superannuation or pension funds. In particular, the cost of operating an automobile, including depreciation thereon, and the annual fees paid to governing bodies will not be allowed.

A warning of the possibility of addiction to amphetamine (benzedrine) sulphate, from its continued use, is made by Sidney Friedenberg. Dr. Friedenberg cites the case of a young woman who, given tablets of the drug for weight reduction, found that she could not carry on her duties of a beautician without the stimulus that the drug supplied. She had been taking amphetamine tablets for five months.—*J. Am. M. Ass.*, 1940, 114: 956.

Divisions of the Association

Quebec Division

The Third Annual Meeting of the Canadian Medical Association, Quebec Division, was held at the Montreal Neurological Institute on October 10, 1940, at 5 p.m., thirty members being present. The President, Dr. D. S. Lewis, occupied the chair.

REPORT OF THE HONORARY SECRETARY

The period under review has been one of great activity for the Division, especially in matters which have required co-operative action with the Canadian Medical Association. A very busy summer in connection with the local arrangements for the Association's Seventieth Annual Meeting held in Montreal in June, 1939, was followed by the outbreak of war in September, and since that time the calls made on the Quebec Division for action as a branch of the national organization have been numerous.

In the light of experience gained in arranging the details of the meeting, members of the Quebec Division who had been actively concerned set down their comments. These were studied and condensed by the Local Committee on Arrangements and a number of recommendations were made in a report to the Canadian Medical Association. Certain of the recommendations were given effect at the annual meeting of the Association held in Toronto this year.

Canadian Red Cross Society.—In the fall of 1939 a request was received from Major D. J. Corrigan, Commissioner of the Canadian Red Cross Society, Quebec Provincial Division, that a special committee composed of members of the Quebec Division be formed to co-operate with the Red Cross in the planning and management of a hospital railway car, to be used in time of peace or in an emergency. Drs. F. G. Pedley, A. T. Bazin, J. C. MacKenzie and Edmond Dubé were appointed to this committee. Dr. L. Gérin-Lajoie was named chairman. The Quebec Division is also represented on the Red Cross Provincial Advisory Emergency Committee by Drs. A. T. Bazin and L. Gérin-Lajoie.

Districts.—It is unfortunate that owing to the war little progress has been made toward the formation of Districts of the Quebec Division. However, some valuable groundwork has been done.

Control of the sale of sulphonamide products.—The Executive recently considered a resolution passed by the Société Médicale des Hôpitaux Universitaires de Québec condemning the unrestricted sale of sulphonamide products by druggists. It was the opinion of the Committee that sulphonamide products should be sold by druggists on medical prescription only, and, as the sale of these drugs is a matter for provincial regulation, a letter in support of the resolution of the Société Médicale des Hôpitaux Universitaires was sent to Dr. Henri Groulx, Minister of Health for the Province of Quebec. It is gratifying to report that Dr. Groulx has stated that he will do his utmost to present an amendment to the law at the next session of the legislature.

Nutrition.—In the spring of 1940 the Canadian Medical Association published a booklet "Food for Health in Peace and War", and to bring it to the attention of the public a series of three broadcasts on nutrition was given over a Canadian Broadcasting Corporation network of stations. The Quebec Division was asked to assist in bringing the booklet to the notice of the French speaking population, and we are indebted to Dr. L. Gérin-Lajoie and Dr. J. U. Gariépy for their help in translating and delivering these three broadcasts.

The war.—Co-operation with the Canadian Medical Association in matters arising out of the war has formed a large part of the activities of the Quebec Division during the past twelve months.

In the second week of September, 1939, the Division asked each of its members to declare his position in

regard to the military service he felt able to offer, and later in the month, after the Canadian Medical Association had undertaken to prepare a register of the medical profession in Canada for the Department of National Defence, a questionnaire was sent by the Quebec Division to all members of the profession in the Province of Quebec. Replies were forwarded to the central office of the Association for compilation, and the results have already been reported in detail by the General Secretary in the *Canadian Medical Association Journal* of September, 1940.

An Advisory Committee was set up by the Canadian Medical Association to act as a consulting body for the Department of National Defence, and the Quebec Division appointed two sub-committees, one for Montreal and one for Quebec, to co-operate with the Canadian Medical Association Advisory Committee and with Military Districts Nos. 4 and 5. Dr. F. S. Patch and Dr. L. Gérin-Lajoie have served as members of the Canadian Medical Association Advisory Committee.

In July of this year, when the question of evacuating children from Britain became urgent, the Quebec Division was asked to assist the Canadian Medical Association in ascertaining the number of Canadian doctors' homes available for the children of British doctors. The membership was circularized and the results made known to the General Secretary who was able to inform the British Medical Association that at least 1,500 children could be given homes in Canada.

Membership.—The membership of the Quebec Division now stands at 633 active and 7 senior members. Two members, Dr. J. E. Dubé and Dr. H. D. Hamilton, were elected to senior membership by the Canadian Medical Association in 1939, and Dr. Maude Abbott was elected a senior member in 1940. It is regretted that Dr. Abbott and Dr. Dubé could not have remained with us longer to enjoy this distinction which was so well deserved.

At the present time 57 members of the Division are on full time service with the C.A.S.F. or the R.C.N.V.R.

The Quebec Division is considering a campaign for new members in the near future, but in the meantime those who are already members can do much to advance the Association's cause.

REPORT OF THE HONORARY TREASURER

The Honorary Treasurer, Dr. E. S. Mills, then read his report, as follows (much condensed).

In regard to the year 1939 the net income from fees was \$1,276.07, which is \$225.35 higher than in 1938. This increase enabled the Quebec Division to meet all expenses out of income in spite of several unusual items, including an amount of \$174.46 which was the Division's share of the cost of compiling a medical register for the Canadian Medical Association. A membership campaign carried out in the winter of 1938-39 also cost the Division \$99.25 for extra copies of the *Canadian Medical Association Journal*.

A credit balance of \$1,966.95 remained in the convention fund after all expenses in connection with the Montreal meeting of the Canadian Medical Association were paid. The greater part of this balance (\$1,500.00) has been invested in Canada's Second War Loan.

The income from fees this year has fallen off by \$116.00, due in part to the loss of fees from 13 members on military service overseas, and in part to present unsettled conditions. Fees have been collected from 93 per cent of the members enrolled on January 1st, 1940.

Committee on Pharmacy.—Chairman, Dr. D. S. Lewis. The Committee was requested to find out the proper authorities to whom a memorial could be addressed covering the unrestricted sale of the sulphonamide drugs. On inquiry this was found to be a matter for the Provincial Department of Health, and due action was taken upon this matter by the Division (see above).

The second question addressed to the Committee had to do with the sale of concentrated tinctures containing

opium for prescription purposes to medical practitioners. Inquiry showed that there had been much abuse of concentrated tinctures by dispensing chemists and also some confusion between the concentrated and the dilute forms, so that legislation had been passed forbidding the sale of these concentrated products to any retail dispenser, including members of the medical profession. This information was communicated to the member who made the inquiry.

Committee on Public Health (report much condensed).—The health of the people of the Province of Quebec as shown by the general vital statistics for 1939 continues to show improvement. The usual indices of the public health, namely, general mortality rates, infant and maternal mortality rates, tuberculosis and typhoid fever mortality rates were, with the exception of tuberculosis, lower in 1939 than in 1938. But Quebec has a long road to travel before it can equal the health situation elsewhere in Canada.

The most important diseases from the standpoint of our ability to control them, are probably those which affect babies, tuberculosis, and syphilis. It would appear to be our duty as physicians to urge upon the authorities an intensification of efforts to control these diseases in the Province of Quebec.

In connection with the war effort of Canada it is to be noted that undoubted improvement in the quality of the medical examinations of recruits has occurred as compared with previous military medical examinations. The requirement of x-ray examinations of the chests of recruits has resulted in the detection of many unsuspected conditions. The Government is to be commended on the improved standard of medical examination. In this connection it is to be noted that the army regulations do not yet require a routine Wassermann test for recruits. It is suggested that the Canadian Medical Association should again make representations to the Government in this regard, for undoubtedly many unrecognized cases of syphilis are being enlisted. The advantages of a routine Wassermann test, like that of a routine chest x-ray, are two-fold. From the standpoint of the recruit it may detect an unsuspected lesion and enable treatment to be instituted; from the standpoint of the country it prevents the enlistment of an unknown liability which may be attributed to military service at a later date at great cost.

Committee on Post-Graduate Education.—Dr. W. J. McNally, Chairman of the Post-Graduate Committee, read the following annual report (much condensed here).

As reported at the annual meeting last year an invitation was sent out to every medical society in the Province of Quebec offering to send them lecturers upon any medical subject which they would choose. Only three societies accepted our invitation: La Société Médicale des Hôpitaux Universitaires, Quebec; District of Beauharnois Medical Association, Valleyfield; and Chicoutimi Medical Society.

Our Committee decided to approach certain likely districts and offered, through the district representative on the Executive of the Quebec Division, to send speakers, either English or French, or both, the topics of the lectures to be chosen by the local group. The first meeting was held in the Hull district, under the chairmanship of Dr. H. B. Church. Other meetings were held in Quebec, Sherbrooke, Granby and Valleyfield.

Our Committee still has under consideration the matter of providing better library facilities for the out-of-town practitioners. Dr. Philpott is in charge of this investigation. The Committee is also trying to make more readily available to the practitioner information about existing post-graduate courses and lectures. This matter is receiving the attention of Drs. Simard and Browne.

Election of President.—The Chairman then informed the meeting that Dr. L. Gérin-Lajoie had been elected President-elect in June, 1939, and on motion by Dr. J. M. F. Malone, seconded by Dr. F. S. Patch, Dr. Gérin-Lajoie was confirmed as President. Dr. Gérin-Lajoie then took the chair.

ELECTION OF OFFICERS AND EXECUTIVE COMMITTEE

President-elect—Dr. H. R. Clouston, Huntingdon;
Chairman of the Executive Committee—Dr. F. S. Patch,
 Montreal; *Honorary Secretary*—Dr. A. W. Young, Mon-
 treal; *Honorary Treasurer*—Dr. E. S. Mills, Montreal.

Executive Committee—Montreal District: Drs. C. K. P. Henry, Montreal, W. de M. Scriver, Montreal, L. H. Gariépy, Montreal. *Bedford District*: Dr. W. S. Rodger, Cowansville. *Huntingdon District*: Dr. M. R. Stalker, Ormstown. *St. Maurice District*: Dr. C. Baribeau, Three Rivers. *Quebec District*: Drs. W. H. Delaney and C. Vézina, Quebec. *Sherbrooke District*: Dr. W. W. Lynch, Sherbrooke. *Hull District*: Dr. H. B. Church, Aylmer.

A. W. YOUNG

Hospital Service Department Notes

A Year of Progress for Hospitals

During 1940 the hospitals of Canada have seen a number of changes and have had several narrow escapes. The war has not affected them to anything like the extent experienced by hospitals in Great Britain, yet in many ways the war has had a serious effect upon hospitals here. Loss of personnel has been particularly noticeable. Administrators, nurses, radiologists, pathologists, anaesthetists, and other staff doctors, orderlies, technicians, physiotherapists, office workers, and many others have joined the various defence forces. In many instances the gaps created have been hard to fill. Some inconvenience is being experienced from the calling up of trainees, but, on the whole, little confusion or embarrassment is being reported.

Costs have risen too, but, thanks to the Wartime Prices Board, prices have not risen beyond reason. During the year ending October, 1940, the average price index of consumer's goods (wholesale) rose some 4.1 per cent. The cost of living went up but 3.5 per cent. As a result of conferences between the Department of Pensions and National Health and the Canadian Hospital Council, a new basis of contract for the care of ex-soldiers was agreed upon. This should simplify the problem of equitable payment for hospital service. The routine chest x-ray of all enlisted men has revealed a surprising amount of chest trouble not disclosed by other means (1.5 per cent). At the close of the year a survey was being taken by the Canadian Hospital Council to ascertain the extent to which the civilian hospitals could release or create space in case of national emergency for military or other use. Advance figures would indicate that a considerable amount of well located bed space

All communications intended for the Department of Hospital Service of the Canadian Medical Association should be addressed to Dr. Harvey Agnew, 184 College Street, Toronto.

could be released or created under emergency conditions.

Hospitals were fortunate in being permitted to retain their sales tax exemption, despite the obvious need by the government for every possible source of tax income. The loss of this exemption would have been a serious blow to many a struggling hospital. They succeeded, too, despite opposition, in obtaining exemption from the operations of the new unemployment insurance measure. All hospital employees except nurses were originally included under the Act, yet, except for nurses, very few regular employees of hospitals experience seasonal or periodic unemployment.

The shortage of interns has increased, if anything, and is causing much concern to many hospitals, particularly non-teaching institutions. Hospitals approved for internship by the Canadian Medical Association provide some 816 internships, over 300 more than the total number graduated each year. The Canadian Intern Board has done a great deal to simplify the task of making graduate intern appointments, but obviously cannot correct this basic shortage. Hospitals are seriously considering the reorganization of interns' duties and the greater utilization of non-medical personnel for many clinical tasks.

Contributory hospital care plans have shown steady growth. The plan operating in the Winnipeg-St. Boniface area is now the largest in Canada. The Associated Medical Services, Inc., of Ontario, primarily a medical care plan, contributes a fixed daily amount towards the hospital account, and a province-wide low cost plan offering semi-public or semi-private care is about to be launched by the Ontario Hospital Association. The number in the United States now enrolled in the "approved" hospital plan exceeds five million.

Of particular interest to the approximately 500 voluntary non-profit hospitals in Canada has been the likely effect of the financial situation to-day upon hospital finance. Increased personal and other taxation has been a noticeable deterrent to private philanthropy in recent years, and the heavy demands of the past year for the war effort through added taxation and war charities has deflected considerable potential and real assistance from the hospitals. As a result construction, except for work already undertaken, has been practically at a standstill this past year, and the purchase of new equipment has been minimized. With municipalities, too, facing heavier expenditures it is but natural that hospitals should be exploring the possibilities of contributory hospital care plans as a backlog of assured income for service rendered.

G.H.A.

The War

Canadian Red Cross Food Parcels for British Prisoners-of-war in Germany

By FREDERICK F. TISDALL, M.D., F.R.C.P.(C.)*

Toronto

The Canadian Red Cross has taken the responsibility of supplying 10,000 food parcels each week for the British prisoners-of-war in Germany. The food is being supplied by Canadian firms at practically the exact cost to the manufacturer, with no allowance for overhead or administrative expenses. The sum involved in supplying these food parcels during the course of one year will approximate one and one-half million dollars. As this money has been subscribed by the people of Canada, it is felt that the physicians of Canada and others would be interested in the scientific analysis of the food being sent.

According to Postal Regulations the gross weight of each weekly parcel dispatched to individual prisoners in Germany must not exceed a total of 11 pounds. The articles chosen and the amounts of each are given in Table I. The

* Department of Pædiatrics, University of Toronto, and Hospital for Sick Children, Toronto.

weight of the whole parcel, including the various containers, is 11 pounds. Each article and the reason for its inclusion will now be considered in detail.

The 1 pound of powdered whole milk when reconstructed with water will supply 18.3 ounces of whole fluid milk per day. This is an excellent source of calories, protein and fat, and in addition, as shown in Table I, is a valuable source of vitamin A, vitamin B₁, or thiamin, vitamin B₂, or riboflavin, and a number of the other members of the vitamin B complex. The powdered whole milk supplies an amount of vitamin C which varies somewhat with the season of the year at which the milk is powdered. It probably contributes 10 mg. or more of vitamin C to the daily ration. Six hundred milligrams of calcium is furnished by the day's supply of reconstructed whole milk.

The amount of butter being sent, namely, 1 pound per week, might at first glance be considered rather large, but it should be remembered that from all reports fats are scarce in Germany. In addition to supplying fat, and consequently a large number of calories for the weight, the butter supplies no less than 1,500 international units of vitamin A. To ensure its keeping the butter is sealed in tins.

The cheese sent is a cheese processed from Canadian cheddar cheese in such manner that

TABLE I.

FOOD ANALYSIS OF CANADIAN RED CROSS FOOD PARCELS FOR PRISONERS-OF-WAR IN GERMANY

	Weekly amount	Daily amount	Calories	Protein	Fat	Carbo- hydrate	Vita- min A	Vita- min B ₁	Vita- min B ₂	Vita- min C	Vita- min D
	oz.	oz.		grams	grams	grams	units	units	micro- grams	grams	units
1. Whole milk powder..	16	2.3	380	20	20	27	568	78	975	?	10
2. Butter.....	16	2.3	486	0	54	0	1560	0	0	0	52
3. Cheese.....	4	0.57	61	4	5	0	325	2	121	0	0
4. Corned beef.....	12	1.7	106	13	6	0	0	0	108	0	0
5. Pork luncheon meat..	10	1.4	131	8	11	0	0	144	81	0	0
6. Salmon.....	8	1.14	111	10	8	0	32	0	0	0	119
7. Sardines or kippers..	4	0.57					22	0	64	0	90
8. Dried apples.....	8	1.14	96	0	0	24	50	15	30	0	0
9. Dried prunes.....	8	1.14					808	15	0	0	0
10. Sugar.....	8	1.14	128	0	0	32	0	0	0	0	0
11. Jam.....	16	2.3	160	0	0	40	0	0	0	0	0
12. Pilot biscuits.....	16	2.3	291	7	7	50	0	0	0	0	0
13. Eating chocolate....	8	1.14	120	1	5	18	0	0	0	0	0
14. Salt and pepper.....	1	0.14	..	..	..	..	..	..	..	..	..
15. Tea.....	4	0.57	..	..	..	..	..	..	..	..	..
16. Soap.....	2	0.28	..	..	..	..	..	..	..	..	..
			2070	63	116	194	3365	254	1379	?	271
Not included in the Food Parcel from Canada (See text)											
Flour.....	10		1000	30	0	210	0	250	297	0	0
Potato.....	8		196	4	0	45	68	88	102	?	0
Total.....			3266	97	116	446	3433	592	1778	?	271

Calories required for men doing light manual work—2,800 per day.

Calories required for men doing moderate manual work—3,300 per day.

Protein requirements—70-100 grams per day.

Fat requirements—100 grams per day.

Carbohydrates supplied go to make up the total caloric intake.

it will keep without going mouldy or deteriorating during transit. Along with the other dairy products, milk and butter, the cheese contributes to the protein, fat, vitamin A, vitamin B₂ and calcium content of the diet.

Corned beef was chosen as a source of meat because in the past it has been found to be one of the most acceptable forms of canned meat for day in and day out use. Its chief value is to supply protein. Pork luncheon meat is included particularly on account of its very high vitamin B₁ content. It consists of 90 per cent lean pork and 10 per cent pork fat. Experience shows that the men prefer a solid meat rather than stews, which they are probably already receiving from German sources.

Salmon, pilchard, and herring in the form of canned herring, kippers and sardines are the best sources of vitamin D amongst our Canadian fish. They furnish valuable amounts of protein and fat, and will make a welcome change from canned meat.

Dried apples and dried prunes when soaked in water make acceptable material for a dessert. Being dehydrated they furnish an appreciable number of calories for their weight.

Sugar and jam are included as a source of calories and along with the eating chocolate supply sweets. The pilot biscuit, or hard biscuit, is made largely of white flour and water. It can be eaten as a biscuit with butter or broken into crumbs to thicken soup.

Salt, pepper, tea and soap are included for obvious reasons.

It is seen from Table I that these foods will supply 2,070 calories, 63 grams of protein, 116 grams of fat and 191 grams of carbohydrate. It is difficult to determine just what food the prisoners-of-war will receive from German sources during the coming months, but according to the International Convention relative to the treatment of prisoners-of-war, "The food

TABLE II.

VITAMIN REQUIREMENTS AND AMOUNTS SUPPLIED BY FOOD AND VITAMIN TABLETS

	Adequate amount required	Supplied by food		Supplied by vitamin tablet	Total
		Canada	10 oz. whole wheat or rye flour - 8 oz. potatoes		
Vitamin A	3,000-6,000 units	3,365 units	68	2,000 units	5,433 units
Vitamin B ₁	300-500 units	254 units	338 units	..	592 units
Vitamin B ₂	1.5 to 2 mg.	1.3 mg.	0.4 mg.	..	1.7 mg.
Vitamin C	40-60 mg.	10 mg.	?	30 mg.	40 mg.
Vitamin D	400 units	271 units	0	200 units	471 units

ration for prisoners-of-war shall be equivalent in quantity and quality to that of the depot troops." This means that the British prisoners-of-war should receive from German sources the same quantity and quality of food as is given to the German garrison troops. Even if the ration of the German garrison troops, and consequently the prisoners-of-war, were cut down to cereals and vegetables, such as 10 ounces of flour and 8 ounces of potatoes per day, this along with the food parcels from Canada would supply 3,266 calories per day, 97 grams of protein, 116 grams of fat, and 446 grams of carbohydrate.

In Table II is set out the daily adequate amounts of vitamins A, B₁, B₂, C and D required in International Units and milligrams, and also the amounts supplied by the food sent from Canada and the amounts furnished by 10 ounces of whole grain flour and 8 ounces of potatoes. In order to overcome any possible deficiency 7 vitamin tablets are included in each weekly parcel, each tablet supplying 2,000 units of vitamin A, 30 mg. of vitamin C, and 200 units of vitamin D.

TABLE III.

MINERAL REQUIREMENTS AND AMOUNTS SUPPLIED BY FOOD

	Adequate requirements	Supplied by Food		Total
		Canada	10 oz. whole wheat or rye flour 8 oz. potatoes	
Calcium...	mg. 600	mg. 748	mg. 100	mg. 848
Iron.....	10	4.7	6.6	11.3
Iodine....	Supplied	by iodized	salt and fish.	

In Table III are given the requirements for calcium and iron and the amounts supplied by the food. In the near future it may be possible to add some form of iron to the biscuits to increase the iron content of the food from Canada.

It is proposed to alter the type of foods sent from time to time to relieve any monotony that may develop, but the general scientific principles as outlined here will be followed.

Acknowledgment is made of help received in this work from Drs. T. G. H. Drake, J. Harry Ebbs, and E. Chant Robertson, Miss W. M. Gear, members of the Fisheries Research Board of Canada, and numerous confrères on this continent interested in nutrition.

A Three-way Heart Test Urged for Military Pilots

Civilian and military pilots and the young men about to train for defense service in America's expanding air forces should have the benefit of a new and highly efficient triple test for unsuspected heart disease, members of the

Aero Medical Association were told at their meeting in Memphis.

Use of the new test detects 20 per cent more cases of heart disease than would be found by the usual physical examination, according to experience with it in more than 500 patients and routine examinations of 200 civilian pilots.

The recent deaths of two young pilots, who suffered heart attacks in mid-flight and were barely able to land their planes before dying, emphasize the need of more thorough examination of the pilot's heart. The ages of these two victims of unsuspected heart disease, 27 years and 34 years respectively, show that serious heart damage is not confined to middle and old age.

"We, as examiners of pilots, should place more emphasis on the thoroughness of our cardiovascular (heart and artery) examinations. We are often chided about our rigid eye examinations that require pilots to be able 'to see around corners'. It is much more important that the pilot should live to see the next landing field. We must recognize that we are training men who must be able to stand the heavy pressure of flight duty. We cannot expect such endurance in the presence of cardiovascular disease."

The new three-way test of heart fitness involves the use of the familiar electrocardiograms and of two new techniques, stethography and cardioscopy.

Electrocardiograms are records in the form of wavy lines on paper of the electric currents accompanying heart activity. With cardioscopy, the physician does not have to wait for a record on paper of heart activity but can look at the message from the heart as it is being sent. If he sees signs of heart damage, he can have a permanent record made of it.

With stethography, the heart "speaks for itself", giving a sound track record of its condition. Sound waves made by the heart as it beats are thus recorded so the physician can tell whether the heart tones are normal or whether there are murmurs indicating heart damage.

Synchronized electric and sound wave messages give much more information about the heart's condition than either one alone. The sound record was essential for diagnosis of one-fifth of the cases reported, detecting early heart disease that would not have been discovered in otherwise thorough heart examinations.—Drs. W. M. Bartlett and J. B. Carter, in *Science News Letter*, November 2, 1940.

Delay Sewing Up War Wounds

War wounds in which the skin and tissues are badly torn should not be immediately sewn up. French army surgeons after experience in the present war all warn of the dangers of primary suture—that is, sewing up the wound

the first time the surgeon sees it—in war wounds. The ideal conditions of a healthy patient, a clean skin, a wound made by a relatively sharp and clean instrument, repair of the wound within six hours after it was inflicted, and opportunity for the surgeon to use meticulous care in treating the wound and to watch it during the time it is healing, are hardly likely to be found in war surgery. But unless these conditions are present do not practise primary suture of wounds.—Dr. F. W. Bancroft, in *Science News Letter*, November 2, 1940.

Colonel Lavell H. Leeson has left Vancouver to assume his position as A.D.M.S. of the 3rd Canadian Division.

Other medical men from British Columbia who are serving overseas are: W. J. Elliot, with the Navy; W. M. Carr and Andrew Turnbull, of Victoria; H. A. DesBrisay, A. C. Gardner Frost, J. A. MacMillan and H. A. Robertson, of Vancouver; and H. P. Swan, formerly of Duncan, all reported to be in England. Dr. H. B. Galbraith is in Montreal on military duties.

Lt.-Col. R. A. Hughes is D.M.O., M.D. No. 11. He took over the office from Lt.-Col. Gordon C. Kenning, who was Acting D.M.O., and is now removed to Regina as D.M.O. of that Military District.

War Literature

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CANADIAN MEDICAL ASSOCIATION JOURNAL

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- Detection of Tuberculosis Among Recruits, G. G. Kayne, 1940, 2: 518.
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- Recent Advances in Blood Transfusion, E. K. Kunkel, 1940, 37: 578.
- Importance of Oxygen to the Navy Aviation and in Therapeutics, W. L. Boothby, W. R. Lovelace and H. H. Carroll, 1940, 37: 640.

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- Air Raid First Aid, Robert J. Blackham, John Bale & Sons, London, 1940.
- Wound Infection, W. H. Ogilvie and others, Lancet War Primer, The Lancet Ltd., 7 Adam St., Adelphi, London, W.C.2, 1940, 2/6 net.
- Field Surgery in Total War, Major Douglas W. Jolly, Hamish Hamilton, London, price 10/6.

In the face of the greatest danger since the days of Napoleon, the British, resolute, seem to say again with Shakespeare—

*Once more unto the breach, dear friends, once more,
Or close the wall up with our English dead!
In peace there's nothing so becomes a man
As modest stillness and humility;
But when the blast of war blows in our ears,
Then imitate the action of the tiger:
Stiffen the sinews, summon up the blood.*

—King Henry V, Act 2, Sc. 4, l. 74.

Medical Societies

The Calgary Medical Society

The monthly meeting of the Calgary Medical Society was held in November, 1940, at the Provincial Sanatorium on invitation by Dr. A. H. Baker, the Superintendent of this institution.

This meeting took the form of a round-table discussion. Members of our Society had been asked to send in questions regarding any phase of the subject of tuberculosis which members of the staff of the Sanatorium would answer, with the exception of tuberculosis of the tarsal conjunctiva and phlyctenular conjunctivitis, which were discussed by Dr. A. E. Fettes, of Calgary.

The value of the tuberculin test was comprehensively outlined by Dr. Darns. Dr. A. H. Baker stated that tuberculosis producing symptoms will give tuberculin reactions in 100 per

cent of patients. Tuberculosis of bones seems to develop a greater degree of sensitiveness to tuberculin than in pulmonary tuberculosis.

Dr. L. M. Mullen presented an interesting case history; interesting because of the sudden termination. This patient had a pleural effusion which was considered to be either of neoplastic or tuberculous origin. As much as 800 c.c. of fluid had been aspirated from his right pleural cavity. Following a routine aspiration, two days before his death, he had severe dyspnoea which gradually lessened. The following day he had another attack of dyspnoea and also loss of consciousness. The same evening he had attacks of vomiting followed by dyspnoea. The following morning his temperature was 97° F. and his pulse 160 per minute. He became extremely weak. It was noted that his liver was enlarged and tender. X-ray examination had shown the right lung markedly collapsed. Post-mortem examination revealed a generalized carcinomatosis.

G. E. LEARMONTH

The Canadian Physiological Society

The sixth annual meeting of the Canadian Physiological Society was held at the University of Toronto on November 1 and 2, 1940. The total registration was 132 and guests.

The Council for 1940-41 was elected as follows: *President*—Prof. G. S. Melvin, Queen's University; *Secretary*—Prof. R. G. Sinclair, Queen's University; *Treasurer*—Prof. E. M. Watson, University of Western Ontario; *Councillors*—Professors J. K. W. Ferguson, University of Toronto; G. Gosselin, Université de Montréal; C. A. Morrell, Department of Pensions and National Health, Ottawa; A. C. Rankin, University of Alberta (Department of National Defence); H. Selye, McGill University; C. B. Weld, Dalhousie University, Halifax.

Fifteen new members were elected, making a total membership of two hundred and forty-five.

During the one morning and two afternoon sessions, forty-two papers were read.

ABSTRACTS OF PAPERS HAVING A SPECIAL MEDICAL INTEREST

STUDIES IN THE ETIOLOGY OF TRAUMATIC SHOCK.

—D. Y. Solandt, J. W. Magladery (by invitation) and C. H. Best, Department of Physiological Hygiene, University of Toronto.

The investigation of traumatic shock in a large series of dogs has re-emphasized the etiological importance of the blood and fluid lost at the site of injury. In many animals shocked by light pounding of the thigh muscles the increase in volume of the injured parts represents a fluid loss which alone might cause death. In a number of instances, however, this fluid loss is not sufficient to account for the death of the experimental animal. Some other factor or group of factors must come into play to tip the scales against the animal's natural powers of recuperation. Moon has been the most recent advocate of a toxic factor. Freeman has suggested a neurological factor and the McGill group

have secured evidence which they interpret as indicating an endocrine factor. In the present work, after demonstrating again the primary importance of local fluid loss, we have attempted to determine, under our experimental conditions, the nature of this unknown factor.

CHRONIC CYANOSIS: PATHOLOGICAL PHYSIOLOGY IN TWO CASES.—James A. Dauphinee and John Hepburn, Department of Medicine, University of Toronto and the Toronto General Hospital.

The blood findings in two cases of chronic cyanosis were presented. In the first case the cyanosis was found to be due to the presence of methemoglobin in the blood. This was measured quantitatively by comparison between the oxygen capacity and the iron content of the blood. The cause of the methemoglobinemia could not be determined. It could be relieved entirely by the administration of methylene blue.

The cyanosis in the second case was not associated with the presence of any abnormal pigment but was due to inadequate oxygenation in the lungs, the arterial blood being less than 70 per cent saturated with oxygen. In the absence of evidence of congenital heart disease it was felt that the cause of the high degree of arterial unsaturation was a "shunt" in the lung. This was eventually shown to be the case at operation where a highly vascular lung tumour—allowing free communication between pulmonary artery and pulmonary vein—was removed by the surgical division. With the removal of the tumour the cyanosis immediately disappeared and the arterial blood became normally saturated with oxygen.

THE INCIDENCE OF ATROPHY OF THE OLFACTORY NERVES IN MAN.—C. G. Smith, Department of Anatomy, University of Toronto.

Serial sections were prepared of 163 olfactory bulbs to study the incidence of atrophy of the olfactory nerves. The observations reveal that such atrophy is very common in adults—55 per cent of 163 bulbs had lost more than three-fifths of their complement of olfactory nerves and 13 per cent had lost all their nerves. Only 29 bulbs were considered normal (a normal bulb being one which was estimated to contain 10,000 or more glomeruli). Partial atrophy of olfactory nerves may occur in all parts of a bulb or be localized to the anterior or, less commonly, the posterior end. The last fibres to survive are those that pass to the middle of the bulb. There was no tendency for the atrophy to occur more frequently on one side of the nose than the other. The two bulbs for a given brain usually showed a similar degree of atrophy, but in certain cases the difference on the two sides was considerable. The atrophy of olfactory nerves is believed to be due to the destruction, as a result of inflammatory processes, of the olfactory ganglion cells located in the nasal mucosa. Recent studies of the sense of smell do not reveal the impairment which the high incidence of atrophy of the olfactory nerves might lead one to expect.

THE GLYCOTROPHIC EFFECT OF PITUITARY PREPARATIONS.—A. H. Neufeld (by invitation) and J. B. Collip, Department of Biochemistry, McGill University, Montreal.

The subcutaneous injection of saline extracts of anterior pituitary glands in 24 hour fasted mice (dba) resulted in a marked increase in body glycogen levels. The liver glycogen as well as that of the carcass was affected. Saline extracts of posterior pituitary glands were found to be from 10 to 20 times more active. Protein hydrochlorides prepared by the picrate-acetone method from anterior as well as posterior pituitary tissue were equally as potent as the saline extracts and showed the same difference in glycotrophic activity. Such extracts, on administration to mice whose glycogen stores have been depleted by fasting, produced a marked rise in glycogen levels; 2 to 4 hours after a single injection

of either of the posterior pituitary extracts a marked lowering of the body glycogen was observed, followed in 6 to 8 hours by increasing values to supranormal levels. The glycotrophic effect of these extracts has been observed with other species, i.e., the guinea pig, rat and rabbit. Of the purified pressor and oxytocin preparations kindly supplied by Dr. R. L. Stehle of the Department of Pharmacology, McGill University, only the pressor preparations showed a marked glycotrophic effect in mice.

The yield of posterior pituitary hydrochloride in two batches was 17 and 23 mg. per g. fresh tissue, with an ash content of 1.86 per cent and a nitrogen content of 13.3 and 13.6 per cent. This product, freely soluble in water, retained its physiological properties at room temperature. Most of the antidiuretic activity of fresh posterior pituitary tissue was present in the hydrochloride. In fairly large doses this preparation showed an antagonism to insulin hypoglycemia and adrenalin hyperglycemia.

A SPECIFIC EFFECT OF VITAMIN A UPON BODY WEIGHT AND BODY COMPOSITION IN THE ALBINO RAT.—Jean Patterson (by invitation) and E. W. McHenry, School of Hygiene, University of Toronto.

Vitamin A causes a difference in weight, not due to changes in food consumption. Analyses of animals fed isocalorically show that the greater weight of those given the vitamin is due to an increased retention of water, protein and fat. The amount of fat in the deficient animals is markedly subnormal. Faecal analyses indicate that the effect of vitamin A is not due to alterations in absorption.

THE EFFECT OF INSULIN ADMINISTRATION ON THE INSULIN CONTENT OF THE PANCREAS.—R. E. HAIST AND C. H. BEST, Department of Physiological Hygiene, University of Toronto.

In a previous report it was shown that fasting or fat feeding led to a decrease in the insulin content of pancreas. Recently we have found that a definite reduction in the insulin content of pancreas results when adequate daily doses of protamine zinc insulin are given to fed rats. In fasting rats and in rats fed fat, the daily injection of protamine zinc insulin occasions a much greater reduction in the insulin content of pancreas than is caused by fasting or fat feeding alone. This supports the view that fasting, fat feeding and insulin administration have a similar effect on the insulin-producing islet cells. By reducing the need for endogenous insulin these procedures allow the islets to rest. Histologically, the islets from all the groups appeared to be normal when stained with hematoxylin and eosin. However, some preliminary granule studies done in collaboration with Prof. A. W. Ham indicate that a reduction in the specific granules of the β cells of the islets is evident in sections of those pancreases which have a low content of insulin.

SOME PROPERTIES OF AN EXTRACT OF ANTERIOR PITUITARY GLANDS PREPARED BY THE PICRIC ACID PROCESS.—A. H. Neufeld, R. L. Noble and J. B. Collip, Department of Biochemistry, McGill University.

A protein hydrochloride was prepared from fresh anterior lobes of beef pituitaries by the Dodds and Dickens modification of Dudley's picrate-acetone method for insulin. The yield of hydrochloride varied in different batches between 9.4 and 19 mg. per g. of fresh tissue. The ash content of the product varied between 0.31 and 0.60 per cent, and nitrogen between 14.0 and 14.5 per cent. The resultant dry product, a light brown powder freely soluble in water, apparently retained its physiological properties at room temperature. These

extracts have been assayed for their hormone content. No evidence of appreciable amounts of thyrotrophic, gonadotrophic, corticotrophic or growth hormone was obtained with the doses used. On the other hand, the extracts showed a positive diabetogenic, glycotrophic and metabolic effect, and were antagonistic to insulin hypoglycemia. Marked prolactin activity has been observed; in species such as the dog, rabbit and cat, full mammary proliferation and lactation have been observed in some instances.

THE EFFECT OF EXTRACTS OF ANTERIOR PITUITARY GLAND PREPARED BY THE PICRIC ACID METHOD ON THE BLOOD SUGAR AND INSULIN CONTENT OF THE PANCREAS.—R. L. Noble, A. H. Neufeld and J. B. Collip, Department of Biochemistry, McGill University.

These anterior pituitary products have been injected subcutaneously into several species for varying lengths of time. An appreciable degree of hyperglycemia, associated with glycosuria, was observed in 15 rabbits, but no such effect was obtained in 10 others. The equivalent of 2 g. of fresh gland was the average daily dose employed. The longest duration of hyperglycemia on continued daily injections was 28 days in one rabbit. In ducks, pigeons, rats and guinea pigs, no effect has been produced with the doses used, but 3 out of 4 cats responded with a marked hyperglycemia and glycosuria. Two normal dogs, injected intraperitoneally with daily increasing doses up to an equivalent of 20 g. of fresh glands showed no glycosuria. One dog was made temporarily diabetic by a fresh saline anterior pituitary extract and then allowing to return to normal by withdrawing the extract. This animal again became diabetic following 5 days' treatment with the hydrochloride (10 g. equivalent of fresh glands daily).

The insulin content of the pancreas has been assayed by the method described by Best, Haist and Ridout. In rabbits described above, which showed a marked hyperglycemia, only traces of insulin were detectable in the pancreas. Other preparations which affect carbohydrate metabolism are also being investigated with special regard to their influence on the insulin content of the pancreas.

EFFECTS OF OESTROGENS ON THE HORMONE CONTENT OF THE RAT PITUITARY.—R. L. Noble and J. B. Collip, Department of Biochemistry, McGill University.

The hormone content of saline suspensions of the pituitary glands of rats has been assayed, using hypophysectomized adult female rats. The pituitary glands were taken from normal adult male and female animals and from one group of each sex treated with stilboestrol for two weeks. On assay growth hormone was found to be present in normal rats of both sexes and was not appreciably lowered by treatment with oestrogens. The gonadotrophic hormone present in large amounts in the pituitaries of normal male animals was markedly reduced by oestrogens. Only a slight effect from the corticotrophic hormone was found. Little evidence of thyrotrophic activity was seen. The mammary glands showed slight duct stimulation by the extracts of normal rats' pituitaries, and this effect was not increased by oestrogens. The thymus gland was markedly increased in size by all the extracts.

In another experiment it was found that following the very prolonged absorption of oestrone from pellets practically all the rats treated developed large pituitary adenomatous tumours. In 26 female rats killed after from 7½ to 13½ months of treatment the average pituitary size was 30.7 mg. (10 to 54 mg.), and only 2 large adenomata were observed. However, in 14 rats treated from 15 to 19½ months every animal showed a large adenoma. The average weight of these was 209.7 mg. (99 mg. to 365 mg.). Two of these adenomata

have been assayed for their hormone content. In these, growth, gonadotrophic and thyrotrophic hormones were not detected, but a slight effect on the adrenals and thymus was produced. No effect on the mammary glands were seen.

THE INHIBITION OF GASTRIC SECRETION BY THE INTRAVENOUS INJECTION OF CALCIUM SALTS.—Rhoda Grant, Department of Physiology, McGill University, Montreal.

In acute experiments on dogs the injection of calcium lactate or calcium chloride inhibits both the nervous and chemical types of gastric secretion. Experiments in which the sodium salt was substituted for the calcium indicate that the calcium radical is the inhibiting agent. The degree of inhibition depends to some extent on the degree of hypercalcemia.

Freezing-point determinations made on blood samples taken at intervals throughout typical experiments, and the very slight changes in urinary excretion gave no evidence that osmotic pressure changes were responsible for the inhibition. Circulatory factors, i.e., general blood-pressure and blood-flow through the stomach could not be correlated with the changes in secretion rate caused by calcium.

THE RELATION OF CALCIUM CONTENT TO ACIDITY AND "BUFFER VALUE" OF GASTRIC SECRETIONS.—Rhoda Grant, Department of Physiology, McGill University.

Variations in the calcium concentration of gastric secretions of both the nervous and chemical types obtained under acute conditions from dogs bear a reciprocal relationship to the acidity of the secretions.

This reciprocal relationship was found when the calcium and acidity changes were either spontaneous or induced; viz., (1) when comparing the levels of calcium and acidity of 24 separate cases; (2) in single experiments when vagal and histamine stimuli were used alternately to produce their characteristic secretions of low or high acidity respectively; (3) when the factors were changed by intravenous injection of calcium salts.

The relationship is not dependent on volume changes. The output of calcium increased after the period of inhibition caused by calcium injection and during vagal stimulation.

The ratio $\frac{\text{"Total Acid"}}{\text{"Free Acid"}}$, which is interpreted here as an index of the buffer value, varies directly with the calcium.

MAMMARY TUMOURS FOLLOWING TREATMENT WITH OESTRONE PELLETS IN FEMALE RATS.—R. L. Noble (by invitation), C. S. McEuen and J. B. Collip, Department of Biochemistry, McGill University.

Mammary tumours were produced in female rats following the subcutaneous implantation of oestrone pellets. The total initial dose of oestrone varied from 4 to 11 mg. implanted as single or multiple pellets when the animals were from 5 to 7 days old. The tumours which developed in over 75 per cent of the animals were usually multiple, discrete and freely movable, slow growing, and not situated near the pellet. Palpable tumours were noted after 7 to 8 months' treatment. Histological examination showed the tumours to be composed of large masses of actively growing cells of irregular size and shape. In most cases, however, a well-defined basement membrane was present and the cells showed little tendency to invade the stroma or surrounding tissue. In some cases, especially where ulceration through the skin was present, the tumour cells were seen infiltrating the tissues in a typically malignant fashion. Typical multiple metastases to the lungs have recently been noted in one animal which died with numerous large mammary tu-

mours. Attempts to transplant the tumours into other rats have been unsuccessful, but in two cases homotransplants have grown successfully.

In 4 rats, specially selected because they had rapidly growing tumours (one also had a homotransplant), removal of the œstrone pellets caused a rapid and complete regression of all the tumours in every case. Subsequent re-insertion of the pellets in 2 rats caused renewed tumour growth. In 4 other animals the daily injection of large doses of progesterone caused a decrease in size of the tumours. The results indicate that mammary tumours produced under these conditions exhibit most of the characteristics of malignant tissue, but their continued growth is dependent on a continuous stimulus, in this case œstrone.

THE EFFECTS OF ADRENAL CORTICAL EXTRACT AND RELATED SUBSTANCES UPON THE PHOSPHATASE CONTENT OF THE BONES OF RATS.—H. L. Williams (by invitation) and E. M. Watson, Department of Pathological Chemistry, University of Western Ontario, London.

The observation that a reduction of the serum phosphatase activity in persons with Paget's disease of bone follows the administration of adrenal cortical extracts prompted an investigation of the influence of adrenal cortical preparations and related compounds upon the phosphatase content of the bones of rats *in vivo*.

The injection of cortical extract (7.5 to 12.5 rat units) was found to produce a decrease of the phosphatase of the femurs most marked after 48 hours. The effect would appear to be related to the action of the compounds with an oxygen on C_{11} since the injection of corticosterone (1.5 to 3.0 mg.) and 17-hydroxy, 11-dehydro corticosterone (2.0 mg.) (kindly supplied by Dr. E. C. Kendall, of the Mayo Clinic) caused a lowering of the bone phosphatase similar to that which followed the administration of the extract.

Desoxycorticosterone acetate, on the other hand, in 5.0 mg. doses, brought about an increase of the phosphatase content of the bones. Estradiol (0.06 mg.) caused a moderate increase and testosterone (5.0 mg.) a somewhat greater increase, while progesterone (5.0 mg.) produced also a slight but significant increase of the bone phosphatase.

The estimation of the relative concentration of the phosphatase of the bones in these experiments was based upon the reaction velocity of the hydrolysis of the substrate, sodium beta-glycerophosphate, under optimal conditions. The concentration of the phosphatase in the extracts of the bones is proportional to the reaction velocity in accordance with the work of O. Bodansky (*J. Biol. Chem.*, 1936, 114: 273).

LIST OF OTHER PAPERS READ AT THE MEETING BUT NOT ABSTRACTED HERE

THE EFFECT OF VARIOUS ANÆSTHETICS ON THE BLOOD VOLUME AND AVAILABLE FLUID VOLUME OF DOGS.—D. D. Bonnycastle, Department of Pharmacology, University of Toronto.

THE EFFECT OF MAINTENANCE OF NORMAL BODY TEMPERATURE IN SPINAL SHOCK.—Albert J. Dalton, Department of Anatomy, McGill University.

DECREASE IN RESISTANCE FOLLOWING CHRONIC DESOXYCORTICOSTERONE ACETATE TREATMENT.—Christian Dosne, Department of Anatomy, McGill University.

CARBOHYDRATE METABOLISM DURING THE GENERAL ADAPTATION SYNDROME.—G. Masson, Department of Anatomy, McGill University.

ANAPHYLACTIC SHOCK IN DOGS WITH AN ECK-FISTULA.—E. T. Waters, J. Markowitz and L. B. Jaques, Department of Physiology, University of Toronto.

CHANGES IN THE METABOLIC RATE DURING THE ALARM REACTION.—Joan Whittaker, V. Schenker and H. Selye, Department of Anatomy, McGill University.

THE BEHAVIOUR OF PLATELETS IN ANAPHYLACTIC SHOCK.—E. Fidler and E. T. Waters, Department of Physiology, University of Toronto.

PRODUCTION OF SYMPTOMS BY SUBCUTANEOUS INJECTION OF HISTAMINE WITHOUT INCREASE OF THE BLOOD HISTAMINE.—Bram Rose, McGill University Clinic, Royal Victoria Hospital, Montreal.

THE INFLUENCE OF THYMOXY-ETHYL DIETHYLAMINE ON HISTAMINE REACTIONS.—G. A. McVicar and E. W. McHenry, Connaught Laboratories, University of Toronto.

THE EFFECT OF SOME PRESSOR DRUGS ON HEALTHY ADRENALECTOMIZED DOGS.—R. A. Cleghorn, J. L. A. Fowler and A. P. W. Clarke, Department of Medicine, University of Toronto.

THE EFFECT OF INTRAVENOUS GLUCOSE ON THE ACTION OF VARIOUS CARDIAC GLUCOSIDES.—A. Rytel, Department of Pharmacology, University of Toronto.

THE DISTAL TUBULE—AFFERENT ARTERIOLE RELATIONSHIP IN THE KIDNEY AND ITS POSSIBLE RÔLE IN DIURESIS.—J. F. A. McManus, Department of Pathology, New York Hospital and Cornell Medical College, New York.

THE REACTIONS OF THE PARTURIENT UTERUS TO EPINEPHRINE AND OXYTOCIN.—D. D. Bonnycastle and J. K. W. Ferguson, Department of Pharmacology, University of Toronto.

THE RELATION OF ACETYLCHOLINE SENSITIVITY TO FIBRILLATION AND ATROPHY IN DENERVATED SKELETAL MUSCLE.—J. W. Magladery and D. Y. Solandt, Department of Physiological Hygiene, University of Toronto.

THE RELATION OF ATROPHY TO FIBRILLATION IN DENERVATED MUSCLE.—D. Y. Solandt and J. W. Magladery, Department of Physiology, University of Toronto.

THE REACTION OF DEGENERATION AND THE SHERRINGTON PHENOMENON IN DENERVATED SKELETAL MUSCLE.—J. W. Scott and D. Y. Solandt, Department of Physiology, University of Toronto.

POTENTIATION OF ACETYLCHOLINE BY ALCOHOL AND ETHER.—G. H. Ettinger and A. B. Brown, Department of Physiology, Queen's University.

THE EFFECT OF IODOACETIC ACID ON THE LIVER AND INTESTINAL LIPIDS OF THE RAT.—R. G. Sinclair, Ruth Montgomery and Jean Cameron, Department of Biochemistry, Queen's University.

A STUDY OF FAT ABSORPTION BY THE RAT.—C. A. Richardson and R. G. Sinclair, Department of Biochemistry, Queen's University.

THE PARTITION OF IODINE IN THE BLOOD OF CATTLE.—Eleanor L. Clarke and E. M. Boyd, Department of Pharmacology, Queen's University.

A DITHIZONE TEST OF LEAD IN URINE.—Walter R. Campbell, Department of Medicine, University of Toronto.

A CLASSIFICATION OF URINARY CALCULI.—J. F. McIntosh, McGill University Clinic, Royal Victoria Hospital, Montreal.

THE PREPARATION AND PROPERTIES OF H. PERTUSSIS ENDOTOXIN.—Lyon P. Streat and Gordon A. Grant, Research and Biological Laboratories of Ayerst, McKenna & Harrison, Ltd., Montreal.

PROTHROMBIN IN THE NEWBORN.—S. G. Ross and H. T. Malloy, Department of Pædiatrics, McGill University.

THE B VITAMINS AND THE SYNTHESIS OF FAT FROM PROTEIN.—Gertrude Gavin and E. W. McHenry, School of Hygiene, University of Toronto.

A SPECIFIC EFFECT OF VITAMIN A UPON BODY WEIGHT AND BODY COMPOSITION IN THE ALBINO RAT.—Jean Patterson and E. W. McHenry, School of Hygiene, University of Toronto.

THE VITAMIN A AND D POTENCIES OF THE OIL FROM THE BODY, LIVER AND INTESTINES OF PILCHARD, HERRING AND TULLIBEE.—L. I. Pugsley, Laboratory of Hygiene, Department of Pensions and National Health, Ottawa.

EFFECTS OF STEROID HORMONES ON THE OVARY AND TESTIS.—S. Friedman, Department of Anatomy, McGill University.

THE TOPICAL APPLICATION OF CERTAIN ESTROGENS TO THE BUCCO-ESOPHAGEAL MUCOSA OF THE FROG.—W. F. Perry, J. W. Clark and E. M. Boyd, Department of Pharmacology, Queen's University.

A STUDY OF THE COMPOSITION OF GASTRIC JUICE SECRETED IN RESPONSE TO ELECTRIC STIMULATION OF THE VAGI AND TO ADMINISTRATION OF MECHOLYL AND ACETYLCHOLINE.—George W. Stavaky, Departments of Physiology, McGill University and University of Western Ontario.

R. G. SINCLAIR,
Secretary.

The New Brunswick Medical Society

The fall meeting of the Executive Committee of the New Brunswick Medical Society was held in Saint John just before the roads of the province became difficult due to early snow fall. Routine business was transacted, and an effort was made to provide guidance for the treatment of evacuated children. Definite action was postponed until the reactions of the Provincial and Federal government to this problem were better known. Arrangements were made for a fresh campaign to collect an increasing number of Canadian Medical Association fees in this division.

A. STANLEY KIRKLAND

La Société Médicale de Montreal

RAPPORT ANNUEL DU SECRÉTAIRE GÉNÉRAL POUR L'ANNÉE, 1940*

C'est avec un sentiment de légitime fierté que je vous présente le quarantième rapport annuel de la Société Médicale.

Fondée en 1900, incorporée en 1929, notre société s'est affirmée cette année comme jamais elle ne l'avait fait jusqu'ici, grâce au dynamisme de son président, à la parfaite entente qui n'a cessé d'exister entre les membres de votre exécutif, mais aussi grâce surtout à votre coopération, messieurs, sans laquelle tous nos efforts eussent été vains.

Aussi, nous vous sommes profondément reconnaissants d'avoir contribué si efficacement au succès de la présente année, qui a été marquée par la célébration du quarantième anniversaire de notre société.

Nous avons cru qu'il convenait de fêter cet anniversaire de la plus ancienne société de médecine à Montréal, chez les Canadiens de langue française et

* Rapport (en résumé) présenté, lors de la dernière séance de l'année 1940, le 17 décembre, à l'Hôtel-Dieu, sous la présidence de M. Oscar Mercier.

d'y associer nos collègues de langue anglaise de la Montreal Medico-Chirurgical Society, avec qui nous avons toujours eu les relations les plus courtoises.

A cette occasion, des "Journées Médicales" ont eu lieu les 9, 10, 11 et 12 octobre dernier dans quatre de nos hôpitaux et un banquet conjoint, sous la présidence d'honneur de l'honorable Henri Groulx, ministre de la Santé, réunissait le vendredi soir le 11 octobre, à l'hôtel Ritz-Carlton, les membres des deux sociétés.

Afin de laisser un souvenir durable de ces fêtes du quarantième anniversaire de la Société Médicale, nous avons publié un Album-Souvenir qui a été gracieusement remis aux membres et à leurs invités, le matin dans les hôpitaux, au moment de l'inscription. Un exemplaire de cet Album-Souvenir a été déposé aux archives.

En février, la Société Médicale a repris la tradition du banquet annuel inauguré par M. Gérin-Lajoie, en 1938. A cette occasion, Ringuet, l'auteur de "Trente arpents", notre distingué confrère, le Dr Philippe Panneton, fit une spirituelle causerie intitulée: "Le médecin peut-il prendre des vacances".

Les activités de la Société Médicale ne se bornèrent point toutefois à ces brillantes manifestations. Comme par le passé, nos séances eurent lieu régulièrement le 1er et le 3ème mardi de chaque mois et nous avons continué à mettre au programme les grandes questions de l'actualité scientifique, notamment les vitamines, le traitement de la syphilis, l'angine de poitrine, les syndromes parathyroïdiens, le rachitisme.

Il n'est pas sans intérêt de souligner que le nombre des membres qui assistèrent à nos séances au cours de l'année a été de 1,500 et la moyenne de 114. Il y eut en tout 61 communications.

En intensifiant la propagande au secrétariat, nous avons réussi à porter le nombre de nos membres à 462, alors que ce nombre atteignait déjà 380 l'an dernier.

Il y a donc dans l'ensemble un progrès sensible, si on en juge par ces chiffres qui sont particulièrement éloquentes. Une mention spéciale doit être faite à propos des membres correspondants régionaux, dont 54 maintenant font partie de notre société. C'est là une heureuse initiative de notre président et je suis heureux de lui en reconnaître le mérite publiquement.

Depuis la dernière séance de décembre, 1939, la Société Médicale a perdu quatre de ses membres les plus distingués: MM. Yves Lefebvre, Antonio Bolduc, Daniel Ladouceur (de Ste-Geneviève) et François De Martigny.

En terminant ce rapport très incomplet de nos activités, il me reste un agréable devoir à remplir: celui de remercier tous ceux qui m'ont aidé dans ma tâche de secrétaire-général et plus particulièrement mon président et mon vice-président, dont la collaboration m'a été si précieuse.

PAUL LETONDAL,

Secrétaire Général

Société médicale des hôpitaux universitaires de Québec

Une séance de la société eut lieu à l'Hôpital du St-Sacrement le 8 novembre. Suivent les résumés des travaux.

UNE GASTRECTOMIE TOTALE.—Florian Trempe.

Un malade âgé de 57 ans, avec une histoire digestive datant de 20 ans, et couronnée d'hématémèse abondante deux mois avant son entrée à l'Hôpital, est admis à l'Hôpital du St-Sacrement, Québec, pour un ulcère-cancer volumineux, siégeant haut sur la petite courbure, lequel est passé inaperçu à l'examen radiographique, quand, par contre, il a été vu par la gastroscopie; le malade qui en était le porteur a pu, de ce fait, bénéficier d'une exploration chirurgicale où il y avait indication de jouer le tout pour le tout, c'est-à-dire, de recourir à une gastrectomie totale.

Le malade vit encore six mois après l'opération, conservant un bon état général, mais ayant de la difficulté à ingérer des aliments solides.

R. DESMEULES,
Secrétaire.

TRAITEMENT CHIRURGICAL DU STRABISME.—Henri Pichette.

Le strabisme est un défaut de parallélisme des axes visuels dû au fait que les deux moitiés de la face et du crâne se développent indépendamment. Les différents traitements médicaux et orthoptiques donnent vraiment bien peu de résultats. Cependant un grand nombre de strabismes guérissent seuls, à mesure que l'enfant grandit; et un certain nombre d'autres sont ou améliorés ou corrigés par le port de verres. Mais seul le traitement chirurgical peut corriger à peu près tous les strabismes, à condition, bien entendu, de ne pas se contenter d'une seule intervention, mais d'en faire plusieurs, au besoin, si cela est nécessaire et tant que le résultat désiré n'est pas obtenu.

L'intervention doit porter sur l'un ou sur les deux yeux, et on combinera les différentes techniques: ténotomie simple, recul du tendon (récession) avancement musculaire, résection, avancement capsulo-musculaire, etc., etc. Mais le récession du muscle le plus court et le plissement capsulo-musculaire du muscle antagoniste sont les méthodes de choix.

Ce travail est suivi de présentations de 120 clichés de patients avant et après l'opération.

SUPPURATIONS ET HYPERGLYCÉMIE CHEZ LE NOURRISSON.—Marcel Langlois et Roland Thibaudeau.

Les auteurs présentent deux cas de suppurations importantes chez des nourrissons hyperglycémiques. Chez l'un, il s'agit d'une ulcération de l'avant-pied; chez l'autre, il existe des lésions d'ecthyma térébrant et gangréneux associées à une otite purulente bilatérale avec suppuration persistante des régions mastoïdiennes, un coryza purulent, une ostéo-arthrite du coude et une kérato-conjonctivite bilatérale. Dans les deux cas l'origine diabétique n'a pu être prouvée. Par contre, l'absence d'acétone avec une hyperglycémie plus ou moins élevée, la rapidité d'amélioration et la petitesse des doses d'insuline employées, s'inscrivent plutôt en faveur d'états para-diabétiques.

Les auteurs croient que la suppuration prolongée dans l'un et l'autre cas, par son retentissement sur le foie aurait engendré un trouble de la glyco-régulation. La cellule hépatique serait alors devenue incapable de fixer le glyco-gène d'où son passage et son accumulation dans le sang. L'hyperglycémie, à son tour, aurait entretenu les suppurations comme cela se voit chez les diabétiques. Il est impossible, pour le moment, de prévoir si ces états para-diabétiques regresseront ou se transformeront plus tard en diabète vrai. Les auteurs terminent en insistant sur la relative fréquence des états para-diabétiques associés aux suppurations prolongées, sur la nécessité de pratiquer chez eux les réactions de glycémie et d'hyperglycémie provoquée, enfin ils soulignent les succès remarquables que donne l'insulinothérapie dans ces cas.

Le séance du 22 novembre, 1940, eut lieu à l'Hôpital Laval. Suivent les résumés des travaux.

TUBERCULOSE PULMONAIRE ET BRONCHOSCOPIE.—Léo Côte.

La bronchoscopie est devenue un moyen de diagnostic de certaines formes de tuberculose pulmonaire compliquée. Elle permet, de plus, l'application d'une thérapeutique méthodique. La trachéo-bronchite tuberculeuse peut se rencontrer dans toutes les formes de tuberculose pulmonaire. Les signes présomptifs cliniques sont le "wheezing", les crises asthmatiformes, la dyspnée à cyanose intermittente, la persistance d'une expectoration

positive en dépit de l'apparente tranquillité du parenchyme, l'abondance de l'expectoration discordante avec l'étendue des lésions radiologiques, la variation quotidienne marquée dans la quantité des expectorations. Les signes radiologiques importants sont l'atélectasie pulmonaire, les plages d'infiltration parenchymateuse variables en étendue à chaque cliché, les cavités fluctuant en grandeur ou augmentant après le pneumothorax. Le bronchoscopiste apporte le diagnostic de certitude. La présence de lésions endo-bronchiques à forme ulcéralive et sténosante assombrit le pronostic en dépit d'une thérapeutique active.

En effet, toute ulcération trachéo-bronchique a une tendance naturelle à la propagation et aucune forme de collapsothérapie ne peut contrôler une trachéo-bronchite tuberculeuse à son stade avancé, même si la lésion parenchymateuse semble sous contrôle. Le collapsus peut même aggraver des lésions déjà existantes.

L'auteur met en parallèle les méthodes de collapsothérapie temporaire et permanente. Il contreindique le pneumothorax fait dans ces conditions. La collapsothérapie temporaire en sténosant la bronche de drainage et en laissant d'autre part une fonction pulmonaire incomplètement abolie peut aggraver la lésion parenchymateuse par la stagnation des sécrétions ou agrandir même la cavité. La thoracoplastie grâce à un collapsus complet contrôlera mieux l'affection pulmonaire située en amont de la sténose, pourvu que le drainage bronchique soit entretenu jusqu'aux derniers temps de la collapsothérapie majeure.

DE L'UTILITÉ DU LAVAGE GASTRIQUE ET DE SON INOCULATION AU COBAYE.—M. Giroux et Ph. Richard.

La méthode du lavage gastrique chez les tuberculeux fut employée pour la première fois, en 1889, par Meunier. Mais ce n'est qu'en 1927 qu'Armand-Delille et ses collaborateurs reprenant la technique originale la perfectionnent et contribuent à son extension. Depuis ce temps de nombreux auteurs ont apporté des statistiques que dans l'ensemble, d'après Saenz et Costil, ont donné 50 pro cent de résultats positifs, tant par l'examen microscopique que par l'inoculation à l'animal, chez des patients n'expectorant pas.

La statistique apportée ici comprend 440 tubages effectués chez des tuberculeux n'ayant jamais craché, ou dont les expectorations ont cessé à la suite du traitement collapsothérapique en particulier. Sur ces 440 tubages, 206, soit 46.8 pro cent furent trouvés positifs au microscope, et 66, soit 15 pro cent de plus après l'inoculation au cobaye, ce qui fait un pourcentage global de 61.0. Ces résultats prouvent l'utilité de la méthode de Meunier.

AMIANTOSE ET CANCER PULMONAIRES.—R. Desmeules, Ls. Rousseau, M. Giroux et A. Sirois.

Les relations qui peuvent exister entre l'inhalation de poussières irritantes et le cancer du poumon ont soulevé bien des discussions. Le cancer de Schneeberg reconnaît comme cause prédisposante la silicose. Egbert et Geiger ont rapporté la première observation de cancer primitif associé à l'amiantose.

Les auteurs rapportent deux observations. Le premier malade, âgé de 57 ans, a travaillé pendant vingt-cinq ans dans l'industrie d'amiante. Il est décédé de cancer pulmonaire avec envahissement secondaire de la plèvre. L'autopsie a montré qu'il existait en plus des corps d'amiante dans le tissu pulmonaire. La deuxième observation concerne un homme de cinquante ans, qui, pendant douze ans, travailla à mettre l'amiante en sac. Il développa un syndrome de bronchite chronique. Il mourut de cancer primitif du poumon avec envahissement de la plèvre et du médiastin. Dans les deux cas, il s'est agi d'épithélioma d'origine broncho-alvéolaire et d'amiantose constatés à l'examen histopathologique.

Les auteurs croient que l'amiantose peut être une cause prédisposante du cancer pulmonaire.

SILICOSE PULMONAIRE ET DÉCAPAGE DES MÉTAUX AU JET DE SABLE.—R. Desmeules et Ls. Rousseau.

Le décapage des métaux au jet de sable offre des conditions de travail qui facilitent le développement rapide de la silicose pulmonaire.

Quatre observations illustrent cette communication. Les quatre ouvriers travaillaient dans une fonderie. Ils étaient employés dans une sorte de caisson à décaper la fonte en se servant de jet de sable projeté sous pression. La durée de l'emploi dans de telles conditions varia entre 6 et 8 ans. Trois ouvriers sont décédés de silicose. Deux ont eu des autopsies et les examens histo-pathologiques n'ont pas indiqué de tuberculose associée.

Les auteurs expriment le vœu que la loi des Accidents du Travail de la Province de Québec soit modifiée de telle sorte que les cas de silicose pure reçoivent compensation. De plus, la silicose contractée dans des industries non-minières devrait être reconnue comme maladie professionnelle donnant droit à une indemnité.

The Regina and District Medical Society

The regular meeting of the Regina and District Medical Society was held at the Hotel Saskatchewan on November 20th. Dr. L. C. Hacking, radiologist at the Regina General Hospital, gave a paper on "The use and abuse of x-ray". Dr. Hacking also showed scenic colour photographs of the Rocky Mountains taken on his holidays.

Miss Jean Leask, of the Victorian Order of Nurses, addressed the Society on the work done by the Order since its founding in Regina eleven years ago. Miss Leask has been awarded a Rockefeller fellowship in public health nursing for the year 1941.

LILLIAN A. CHASE

The Saint John Medical Society

The regular monthly meeting of the Saint John Medical Society was held at the Admiral Beatty Hotel, Saint John, N.B., on November 26th. Dr. Douglas Gibbon was chairman and Dr. A. F. Chaisson was the special speaker. The subject for discussion included remarks on, adrenal insufficiency, hypoinsulinism as well as some new notes on the causation and treatment of epilepsy. Dr. Chaisson is a newcomer as a speaker before the Saint John Medical Society and his first appearance provided a most enterprising and instructive evening. A great deal of his material was new and was interestingly presented and caused an unusual amount of instructive discussion.

A. STANLEY KIRKLAND

Thelma Wenzel states that spirochaetes were recovered in cultures from the blood of two patients suffering from arthritis. In one of these cases the spirochaetes were found on ten different occasions over a period of five months. The author remarks that these spirochaetes do not fit into the description of any spirochaetes reported in the literature.—*Am. J. Clin. Path.*, 1940, 10: 460.

Abstracts from Current Literature

Medicine

Pleural Effusion in Pneumothorax. Eng, R. T.: *Am. Rev. of Tuberculosis*, 1940, 42: 183.

In 394 consecutive pneumothorax cases 269, or 68.3 per cent, formed fluid which remained for a week or more. This was observed on fluoroscopic examinations performed at intervals of from 3 to 14 days. The fluid formed within the first three months in half the cases, within 6 months in two-thirds, and within a year in 85.6 per cent. The incidence of fluid was greatest in the far advanced cases, less in the moderately advanced, and least in the minimal. Therefore a great number of effusions can be safely avoided by establishing pneumothorax early. Of the 49 deaths in the cases under consideration fluid developed in 40, and only two of these did not show far advanced lesions. Empyema developed in 49 of the 134 cases in which aspiration was done. Various irrigations are considered with their results.

S. R. TOWNSEND

Clinical Investigations of some Factors causing Prothrombin Deficiencies: Significance of Liver in their Production and Correction. Andrus, W. D. and Lord, J. W.: *Arch. Surg.*, 1940, 41: 596.

The authors studied the plasma prothrombin levels in two groups of cases with disorders of the biliary tract and other conditions associated with deficiencies in the clotting component. In the first series 22 patients were found to have low prothrombin levels and were treated with vitamin K and bile salts. With this therapy and transfusions for some of the patients, hæmorrhage ceased when it was present on admission or its subsequent occurrence was prevented, except in one patient who died. The bleeding in this case was not connected with any prothrombin deficiency.

Vitamin K of a synthetic nature was effective in a group of 38 cases in the absence of damage to the liver. They found the clinical effectiveness of vitamin K may be diminished or even abolished in the presence of severe hepatic damage.

S. R. TOWNSEND

Urographic Evidence of Renal Lesions in a Series of Patients Suffering from Essential Hypertension. Perman, R. O., Thompson, G. J. and Allen, E. V.: *Proc. Staff Meet. Mayo Clinic*, 1940, 15: 467.

The authors point out that the coexistence of renal disease and hypertension does not indicate that the former condition causes hypertension. Neither does demonstration that a specific renal lesion has caused a specific instance of hypertension indicate that all, most, or much of the total incidence of hypertension

is caused by such renal lesions. Statistical studies dealing with the question of relationship of renal disease to hypertension are likely to be misleading. In their estimation the question can be answered in only one way, by determining the effect on hypertension of the removal of surgical lesions of the kidneys. To this end, it is advisable to perform urographic examination in many instances of hypertension so that renal lesions ordinarily treated appropriately by operation may not be overlooked. In this way the incidence of "surgical" renal lesions which cause hypertension, in essential hypertension, may be determined. In the meantime it seems wise to avoid a hasty conclusion that renal hypertension and essential hypertension are identical conditions. For the time being, it would seem, that the conclusion that renal hypertension has been occasionally mistaken for essential hypertension in the past is more warranted than is the preceding conclusion.

S. R. TOWNSEND

Surgery

Surgical Problems in the Treatment of Chronic Ulcerative Colitis. Stone, H. B.: *Arch. Surg.*, 1940, 41: 525.

Chronic ulcerative colitis of the so-called idiopathic form presents many problems. Its cause still eludes discovery. The medical care is by no means acceptably standardized. The prognosis is very uncertain. The clinical course is full of surprises and disappointments. Recurrence after years of apparent cure is well known. The author is concerned with the proper place of surgical measures in the treatment of the disease itself. The operations of appendicectomy and cæcostomy for irrigation of the diseased colon have been abandoned in favour of complete transverse ileostomy a short distance above the ileocaecal valve. The principle employed in this method has nothing to do with irrigation of the colon from above, but is designed to put the large bowel completely out of function and give it physiological rest. The inflamed and damaged colon no longer has to transport the ingested food; its peristalsis is greatly reduced and distension and mechanical irritation are lessened. These favour the healing and reparative forces. This theory does not always work, and following ileostomy the colon may heal completely or there may be great improvement in the patient's general condition, but, with persistent evidence of the disease in the large bowel, the progress of the disease may not be arrested. Progressive fever, bleeding, loss of weight, and anaemia may occur. Early operation offers improved results. Stone refers to the type of operation devised by Cattell, of the Lahey Clinic, as likely to reduce the distressing features of ileostomy and describes methods of determining when the stoma may be closed with safety.

G. E. LEARMONTH

Bleeding Oesophageal Varices. Walters, W., Moersch, H. J. and McKinnon, D. A.: *Arch. Surg.*, 1940, 41: 1101.

This contribution by Walters and his associates is an evaluation of methods directed toward the control of oesophageal varices, especially by direct injection of a sclerosing solution.

These varices develop as a result of obstruction of the portal or splenic veins because the oesophageal veins are one of the three sites of communication between the portal and caval systems. Since the veins in the submucosa of the lower part of the oesophagus are poorly supported by loose connective tissue, with the increase in the quantity of blood passing through them varices develop, become superficial to the oesophageal mucosa, and are prone to rupture. Various methods towards prevention of fatal bleeding have consisted of (1) splenectomy, (2) omentopexy, (3) ligation of the coronary vein with or without splenectomy, and, more recently (4) injection of a sclerosing solution transperitoneally into the paraoesophageal veins and directly into the varices through the oesophagus. The authors report the histories of six patients in whom the injection method of oesophageal varices was performed. They conclude that the recent successful obliteration of oesophageal varices by the injection of sclerosing solutions through the oesophagoscope at the Mayo Clinic give indication that this is a procedure worthy of trial.

G. E. LEARMONTH

Factors in Recurrence of Varicosities following Treatment. Stalker, L. K. and Heyerdale, W. W.: *Surg., Gyn. & Obst.*, 1940, 71: 723.

The authors refer to recurrences following primary operative treatment with coincident and consecutive injections, whether this be ligation at the sapheno-femoral junction with excision of at least 2 inches of the greater saphenous and all the tributaries in the operative field or stripping with excision. They believe the recurrence is due to non-excision of a sufficient length of vein, to non-ligation of all the branches at this level, or to the lack of finding all the branches. In the last instance the lateral and medial superficial femoral veins probably play a major rôle; in only 10 per cent of their 700 cases was either of these in the operative field and most often it was the lateral branch. Sometimes the lateral branch which is superficial and lateral to the greater saphenous has been considered to be the greater saphenous. They insist on an incision placed close to the inguinal fold and gloved-finger separation of the stump of the great saphenous to its junction with the femoral. One further protection is the pre-operative delineation of all incompetent veins in the lower extremity. They insist that failure of thrombosis after opera-

tion is due to lack of proper operative technique except in (1) arterio-venous fistula, (2) marked diffuse varicosities associated with pregnancy, (3) a certain small group of patients who are resistant to sclerosing solutions although these may be cleared with persistence.

No mention is made of the lesser saphenous and its anatomical rôle in "recurrences".

FRANK DORRANCE

Surgery of the Aged. Hay, A. W. S.: *Canad. M. Ass. J.*, 1940, 43: 531.

Dans ce travail basé sur des observations personnelles, et sur les résultats opératoires d'un grand nombre de vieillards opérés au Winnipeg General Hospital, Hay s'attache exclusivement à démontrer la possibilité et la nécessité d'opérer les malades âgés, si rien en dehors du temps chronologique ne vient nettement contraindre l'opération. La formule banale "trop vieux pour l'opération" justifiée éventuellement par des accidents mortels post-opératoires doit tout de même nous rappeler que l'âge des malades à opérer doit être considéré plus comme un ensemble de processus dégénératifs que comme une simple addition d'années.

A 75 ans un homme peut fort bien être un bon candidat à l'opération si d'autre part la lésion et l'état général ne la contraindissent point. Le facteur âge ne doit pas à lui seul commander l'abstention. Un vieillard acceptera mieux un risque opératoire de 10 à 30 pour cent que l'idée de terminer ses jours à la suite de mois, voire d'années grevées de malaises et de douleurs. Le progrès médical en évolution constante nous impose donc de façon plus impérieuse la nécessité d'opérer les vieillards. Cependant, il est inutile d'opérer pour les lésions mineures, telles que: opérations de chirurgie plastique, durillons, hernie encore contenue par une ceinture herniaire, etc.

Par contre, il existe trois catégories d'opérations à pratiquer nécessairement: 1° les opérations d'urgence, pour parer à un danger immédiat. 2° celles qui doivent soulager de douleurs périodiques intenses (coliques hépatiques) ou faire disparaître une infirmité physique grave, (grosse hernie). 3° les tumeurs cancéreuses.

L'argument du risque opératoire si souvent invoqué est moins grand qu'on ne saurait d'abord l'imaginer, si l'on considère un certain nombre de statistiques relevées par l'A.

Autre objection: ces opérés, même s'ils survivent à l'op. ne vivent plus que quelques semaines ou quelques mois d'une existence misérable victimes d'une maladie intercurrente. Les cas rapportés par Newton et ceux de l'A sont un démenti à cette objection. L'A, se basant sur ces cas personnels et sur 536 malades âgés de plus de 70 ans, ayant subi des opérations majeures, à l'Hôpital Général de Winnipeg de 1931 à 1938, met en exergue le

facteur âge en rapport avec la mortalité post-opératoire. La mortalité totale de 16.6 pour cent est approximativement 3 fois plus élevée que chez les malades de moins de 70 ans, opérés par les mêmes procédés et pour des lésions similaires.

L'auteur passe en revue les facteurs qui ont vraisemblablement été cause de décès, en donnant des commentaires sur ces statistiques de décès.

Il présente ensuite six observations personnelles détaillées de vieillards opérés, dont l'âge varie de 70 à 83 ans.

Dans un court résumé l'A conclut en rappelant que: 1° l'âge chronologique n'est pas l'unique critérium dans l'indication opératoire; 2° l'âge n'est qu'un des facteurs dans l'estimation du risque opératoire; 3° la médication intra-veineuse doit être prudente en raison de la sclérose artérielle, de la dégénérescence du muscle cardiaque et de l'œdème pulmonaire possible; 4° les calmants et hypnotiques devront être administrés en considérant chaque cas particulier; 5° une longue préparation pré-opératoire est souvent très recommandable; 6° si les recommandations énumérées au cours de ce travail sont observées, la chirurgie des vieillards peut être réalisée sans l'inquiétude angoissante à laquelle nous étions habitués.

PIERRE SMITH

Quelques complications de la gastro-entérostomie. Chaput, Y.: *Union Méd. Can.*, 1940, 69: 954.

Dans l'étude de ces syndromes l'étroite collaboration médico-chirurgicale et radiologie s'impose. Chez le gastro-entérostomisé souffrant, faire une enquête sur les troubles pré-opératoires en raison des lésions associées éventuelles pré ou post-opératoires.

Les troubles post-opératoires en rapport avec l'ulcère sont cependant les plus fréquents et sont habituellement les suivants: 1° le syndrome ulcéreux post-opératoire; 2° les adhérences; 3° les sténoses; 4° les gastro-jéjunites.

1° *Le syndrome ulcéreux post-opératoire.* — Ici trois possibilités; 1° la reviviscence de l'ancien ulcère; 2° l'apparition d'un ulcère peptique ou gastro-jéjunal; 3° la fistule jéjunocolique. L'auteur pour chacune de ces trois possibilités énumère les modalités étiologiques les plus probantes et les signes cliniques et radiologiques essentiels.

2° *Les adhérences;* elles peuvent ne jouer aucun rôle dans les troubles post-opératoires. Cependant elles peuvent occasionner des péritonites, des désordres biliaires et coliques, des hématomés, des mélena. Elles peuvent atteindre l'état général, provoquer des dystonies neuro-végétatives, des carences vitaminées.

3° *Les sténoses;* ici deux possibilités: sténose des anses ou sténose de la bouche de gastro-entérostomie. L'A énumère les constatations

cliniques et radiologiques de ces deux variétés de sténose.

4° *Les gastro-jéjunites* peuvent être aiguës ou chroniques: des commentaires cliniques, radiologiques, gastroscopiques sont présentés par l'auteur.

Traitement: Surtout d'ordre chirurgical notamment pour la fistule jéuno-colique et la majorité des ulcères peptiques. Mais pour des raisons bien définies il importe d'essayer le traitement médical esquissé par l'auteur avant toute réintervention chirurgicale. Si malgré la thérapeutique médicale les troubles persistent, il faut recourir à la chirurgie. Toute opération autre que la gastrectomie donne rarement satisfaction. On ne doit pratiquer la simple dégastro-entérostomie, que si le malade ne peut tolérer une résection gastrique ou comme premier temps à une gastrectomie ultérieure.

PIERRE SMITH

Obstetrics and Gynecology

The Physical and Psychological Symptoms of the Menopause. McDowell, J. G. and Paterson, A. S.: *J. Obst. & Gyn. of the Brit. Emp.*, 1940, 47: 319.

The physical symptoms.—Hot flushes were the most frequent complaint, occurring in 75 per cent of the cases. They might be slight or severe. In the latter case there were often headache, giddiness, or a tight feeling in the chest, followed by a wave of heat distributed over the face and neck. Hot flushes would be brought out by lying in bed or by some increase of heat in the room, or by emotion. Rheumatic pains in the limbs and joints, in the latter sometimes amounting to arthritis, occurred in 50 per cent of cases, of which 4 per cent were severe. Change in weight was found in 59 per cent of the women, and in 54 per cent this change was in the direction of obesity.

Alteration of blood pressure is possible, depending on endocrine as much as on arterial changes. Mental disturbances are usually found in conjunction either with low blood-pressure accompanied by increase in weight or by an increase of blood-pressure. Pruritus occurred in 51 per cent. It is particularly common and severe in the anal and vulval regions. Vertigo was complained of in 72 per cent. Headache occurred in 45 per cent of the cases. Alteration in sexual desire was found in 75 per cent.

Menopausal neuroses comprise emotional instability; depression and fatigue; anxiety states with hypochondria and phobias; epileptoid attacks; paranoid manifestations.

Treatment.—The conventional view of treatment is that, after excluding any malignant disease, the medical adviser should reassure the patient that the symptoms will gradually subside. The fatigue from which some women suffer at this time is almost certainly of endocrine origin. It is reasonable, therefore, to

reduce the depressed patient's activity as much as possible. It is advisable in milder cases to order 2 hours' rest in the afternoon. The other symptoms such as mental irritability, dyspepsia, anorexia, arthritis, hypothyroidism and the like, can be treated symptomatically. P. J. KEARNS

The Use of Sulfanilamide in Obstetrics and Gynecology. Gordon, C. A. and Rosenthal, A. H.: *Am. J. Obst. & Gyn.*, 1940, 40: 211.

In minor febrile disturbances chemotherapy should not be used. In severe intrapartum and puerperal infections of the genital tract sulfanilamide should be given, provided the patient is in a hospital where its administration may be properly controlled. Bacteriological diagnosis need not precede therapy, yet early recognition of the infective agent is important. Since it is probable that sulfanilamide is effective only when the *S. hæmolyticus* Group A, is present, administration should not be continued for longer than a week if another organism has been isolated.

In mastitis not responding to ordinary treatment chemotherapy should be tried. In pyelitis it is at least as effective as other methods of drug treatment. A large series of cases followed over a considerable period of time will be necessary before positive statements can be made.

Sulfanilamide should be used in gynecological infections: (1) if they are primary gonococcal; (2) if the smear or culture is positive, with exacerbation or reinfection of an old gonococcal infection, and (3) when the *S. hæmolyticus* can be demonstrated as the infective agent.

Sulfanilamide should not be given in cases of cellulitis, pelvic or abdomino-pelvic abscess, or to patients with acute exacerbations of chronic pelvic infections with tubo-ovarian masses when the gonococcus cannot be demonstrated. Evidence accumulates that sulfanilamide should not be given to ambulatory patients.

ROSS MITCHELL

The Significance of the Tuberculin Test in Pregnancy. Maeder, E. C. and Myers, J. A.: *Am. J. Obst. & Gyn.*, 1940, 40: 218.

The woman who enters upon the period of pregnancy with a tuberculin reaction is not so good a risk as the woman who is a non-reactor, since the tuberculin reaction indicates the presence of living tubercle bacilli in the body. Routine tuberculin tests followed by x-ray films of the chest and complete examination of the reactors should rank with routine Wassermann tests and complete examinations of the reactors as a medical necessity in pregnant women.

The pregnant woman with tuberculin should receive whatever treatment is indicated throughout the period of pregnancy and for as long thereafter as necessary. Collapse therapy is valuable when indicated. The offspring of

mothers with tuberculosis should have no contact with the mother as long as her disease is contagious. Tuberculosis foci may appear or extend during or following pregnancy.

ROSS MITCHELL

Ophthalmology

Unusual Changes in the Retinal Veins in Diabetes. O'Brien, C. S. and Allen, J. H.: *Arch. Ophthalmol.*, 1940, 24: 742.

Retinal varices are rarely observed but may be seen occasionally in association with the vascular changes which occur in the retinitis of diabetes. Sclerosis of the retinal vessels is an almost constant finding in adults who have had diabetes over a period of years. Probably such changes in the vascular system are either hastened or even brought about in some way by the metabolic disturbances associated with the disease. The retinitis of diabetes is believed to be the result of such pathological operation in the vascular system.

Ophthalmoscopic examinations of several hundred diabetic patients over a period of years revealed many with the typical signs of retinitis. Almost invariably sclerosis of the retinal vessels was in evidence, and in an occasional case varices of the retinal veins were noted. Most frequently the varices were found in those with poorly controlled, long-standing diabetes.

Details are given of 21 cases of diabetes with retinitis and retinal varices. The authors conclude that varices of the retina are uncommon, but are seen occasionally in patients with the retinitis of diabetes and more rarely in those with arteriosclerosis retinitis. In addition to the typical findings of diabetic retinitis with its commonly associated arteriosclerotic changes, the veins show irregular, localized, varicosities. Under the microscope the veins appear sclerosed, the walls showing variations in thickness, hyaline degeneration, endothelial proliferation, and thromboses. The article is profusely illustrated.

S. HANFORD MCKEE

Value of Tryparsamide in the Treatment of Atrophy of the Optic Nerve due to Syphilis. Sutherland-Campbell, H.: *Arch. Ophthalmol.*, 1940, 24: 670.

The consideration of amblyopia as it occurs in association with primary atrophy of the optic nerve following tryparsamide therapy is of interest, as within the past two years certain authorities have again advocated the use of this drug for the treatment of neuro-syphilis, despite the presence of such atrophy.

After reviewing the historical aspect of this question the author concludes that whatever measures are eventually adopted in the treatment of primary atrophy of the optic nerve he believes that tryparsamide stands condemned, as in the available literature there are but seven reports, with a relatively small number of cases

where treatment of primary atrophy of the optic nerve with tryparsamide was conducted without damage to the optic system. Only three of the reports indicate that there was improved vision in a few cases. In practically all other reports the harmful effect of tryparsamide in the presence of primary atrophy of the optic nerve is contended and maintained, and it appears that the considered opinion of the majority indicates that the use of tryparsamide in the relatively few cases of tabes or paresis of the tabetic type in which primary atrophy of the optic nerve occurs is not justified in the light of its dangerous potentialities. The author quotes Moors, who writes, "The only occasion in which the use of tryparsamide is justified in optic atrophy is when the patient is already completely blind, under these circumstances it is a most valuable drug for the management of generalized neurosyphilis." S. HANFORD MCKEE

Neurology and Psychiatry

Epilepsy. Newer Methods of Investigation and Treatment. Lennox, W. G.: *J. Lab. & Clin. Med.*, 1940, 26: 1.

The author summarizes the development of the modern knowledge of epilepsy. Studies by means of the electro-encephalogram are discussed and explained in a lucid manner. This apparatus, first developed by Berger, of Jena, "opened not just a new chapter but a new volume in the study and treatment of this disease." Part of the progress of research in epilepsy has been the elimination of groups of persons who rightfully belong in some category besides epilepsy. Many a patient labeled "hysterical" or "psychopathic personality" or simply "mean" can now be diagnosed as dysrhythmic and treated as a sick person instead of an emotional or bad one.

The value of sodium diphenyl hydantoinate (dilantin) as an anticonvulsant superior to the bromides and the barbiturates is pointed out. It is much more effective in stopping psychic and grand mal seizures than in stopping petit mal. More careful supervision of the patient and the dosage is required than for bromide or phenobarbital. The combination of phenobarbital and benzidrine may help where dilantin sodium fails.

The investigations of Penfield in Jacksonian epilepsy are mentioned and their practical significance emphasized. GILBERT ADAMSON

Surgical Division of Commissural Pathways in the Corpus Callosum: Relation to Spread of an Epileptic Attack. Van Wagenen, W. P. and Herren, R. Y.: *Arch. Neurol. & Psychiat.*, 1940, 44: 740.

It has long been considered that the disordered wave of nerve impulses which results in an epileptic seizure with loss of consciousness usually begins at one focal point and then

spreads widely to other parts of the neopallial portion of the brain. A series of clinical and pathological observations made by the authors led to the belief that a gross lesion of the corpus callosum would confine an epileptic wave to one hemisphere of the brain. During such an attack consciousness would not be lost and generalized convulsive movements not occur. Acting on this hypothesis it was decided to divide the corpus callosum surgically. This was carried out in ten patients who were all seriously incapacitated by epilepsy and not controlled by medical therapy. The operation presented technical difficulties but was accomplished without fatality in all ten cases. No serious physiological disturbances such as apraxia or astereognosis resulted from the operation, although in the light of the old conception of corpus callosum function such disabilities might have been expected. The results of operation were not uniformly good but in a few cases there was striking benefit. Patients who have a large cortical or subcortical scar in one hemisphere appear to be the most favourable for this section. It appeared in the unsuccessful cases that there likely were bilateral multiple foci from which seizures could originate, possibly simultaneously.

FRANK TURNBULL

Therapeutics

The Treatment of Furuncles, Carbuncles and Abscesses of Staphylococcal Origin with Thiazole Derivatives of Sulfanilamide. Bell, C. A. and Abel, A. R.: *Am. J. Surg.*, 1940, L-2-258.

Sulfamethylthiazole and sulfathiazole have been found to be more effective against staphylococci than sulfapyridine *in vivo*. Tested on animals, it was also found that reactions were fewer and less severe. The results when used on human patients with boils were encouraging and they were not found to be dangerous drugs. The 50 cases reported include an unselected series of carbuncles, furuncles and abscesses. The dose finally established was that sufficient to raise the blood concentration to over 3 mg. per cent. It was given suspended in milk, 2 g. initially, then 1 g. q.4.h. The 4 a.m. dose was omitted after 48 hours. Thus the average adult received 5 or 6 g. daily. Children eliminate the thiazoles rapidly, tolerate them well, and were given 0.5 g. initially and 0.25 g. q.4.h. per 25 lbs. weight. Two patients were unable to take the drug per os, and rectal administration was successful. It was found that most sulfathiazole was present in the blood in the free form and 25 per cent was conjugated (acetylated). It was eliminated in 24 to 48 hours.

The complications noted were: nausea in 35 per cent; vomiting in 12 per cent; crystals in the urine in 65 per cent; headache in 12 per cent; hæmaturia in 8 per cent; skin rashes 8 per cent; anorexia 8 per cent; weakness 4 per cent. These figures apply to the use of sulfa-

methylthiazole, but the figures with sulfathiazole were similar. No cases of leukopenia were seen, though two suffered a moderate anæmia.

Of the 50 cases, 38 were definitely improved. Furuncles disappeared in 4 days on the average, the earlier boils less quickly, but without the formation of pus. Carbuncles responded more slowly. Diabetes slowed the recovery too. Cellulitis cleared up without pus. If operation was deemed necessary it was found wise to give the sodium salt intravenously beforehand, to obtain an adequate blood level quickly. Accessible abscesses should be drained and incision for drainage was still necessary where there was pus under tension, but no surgery was done for furuncles.

The authors conclude that the thiazoles shorten the illness and are therefore of value in lesions due to staphylococcus. BURNS PLEWES

Effect of Promin on Experimental Tuberculosis.

Feldman, W. H., Hinshaw, H. C. and Moses, H. E.: *Proc. Staff Meet. Mayo Clinic*, 1940, 15: 695.

These authors report the striking results of promin (sodium salt of P.P¹ diaminodiphenylsulphone-N.N¹-dextrose sulphonate) on guinea-pig tuberculosis. The 30 treated pigs were each given about 300 mg. of the drug per day in their food. A few days later they and 20 controls were subcutaneously infected with tubercle bacilli. In 84 days all the controls were dead and 24 of the 30 treated pigs were still alive. In 164 days the 13 survivors of the treated group were killed. At autopsy all of the controls showed tuberculosis of the spleen, but 62 per cent of the treated pigs showed spleens histologically free of tuberculosis. Some of the deaths in both series were due to gastrointestinal lesions from an inadequate diet. No toxic symptoms due to promin were noted. F. G. ALLISON

Crystalline Concretions in the Renal Tubes Following Sulfathiazol Therapy. Repper, S.: *Digest of Treatment*, 1940, 4: 295.

Les auteurs rapportent l'histoire d'un patient décédé de pancréatite aigue hémorragique chez qui à l'autopsie ils trouvèrent des concrétions des dérivés de sulfathiazol dans les tubes rénaux, les bassinets et la vessie. L'oligurie et l'azotémie de ce malade étaient sûrement en rapport avec ces concrétions rénales.

On a rapporté depuis assez longtemps l'existence de concrétions dues au sulfapyridine, siégeant surtout dans les bassinets ou dans les uretères, ce qui laisse à supposer que la précipitation se produit là où la concentration des urines est maxima. Contrairement au sulfapyridine il semble que le sulfathiazol ne soit pas réabsorbé aussi facilement au niveau des tubes contournés. Sa cristallisation est plus marquée.

Les auteurs croient que l'endroit où se ferait la précipitation dépend du degré de saturation

du médicament au niveau des glomérules, de la concentration au niveau des tubes contournés et de la réabsorption du produit. Il semble, par conséquent, que le sulfathiazol précipite plus facilement dans le rein; que le sulfapyridine précipite plus dans le bassinet et les uretères, par conséquent, soit plus facile d'accès pour l'urologiste.

Les auteurs concluent en insistant sur la nécessité des analyses d'urines et l'ingestion suffisante des liquides au cours du traitement par le sulfathiazol.

YVES CHAPUT

The Treatment of Acute Attacks of Bronchial Asthma by Intravenous Injection of Aminophylline. Carr, H. A.: *J. Lab. & Clin. Med.*, 1940, 25: 1295.

L'auteur rapporte 22 cas d'asthme bronchique en crise aiguë, traités à l'hôpital Bellevue par des injections intra-veineuses d'aminophylline. Ces malades étaient réfractaires à l'adrénaline. La dose fut de 0 gr 48 d'aminophylline dans 2 c.c. d'eau distillées, en injection intra-veineuse et dose totale administrées en deux minutes. Environ 1/3 des cas eurent des malaises: étourdissements, nausées, céphalée ou douleurs thoraciques, mais rien de plus; dans la 1/2 des cas le soulagement et la cessation de la crise fut instantanée: chez les autres, l'action se fit sentir de 20 à 30 minutes après l'injection. L'action du médicament persiste d'une heure à plusieurs jours sans récurrence.

Huit malades, sur douze, n'ayant reçu aucune autre thérapeutique antérieure, ont eu un soulagement immédiat. Huit autres malades ayant reçu de l'adrénaline sans résultat, furent soulagés par l'aminophylline, soit immédiatement, soit 20 minutes après l'injection.

Et l'auteur conclut que l'aminophylline en injection intra-veineuse est très efficace dans le traitement des crises d'asthme bronchique, notamment lorsqu'il y a un état réfractaire à l'adrénaline.

YVES CHAPUT

Pathology and Experimental Medicine

The Anæsthetic Action of Steroids. Selye, H.: Abstract of a paper presented to the Montreal Physiological Society at its meeting on November 18, 1940.

Experiments in the rat, mouse and guinea pig indicate that various steroid hormones cause deep anæsthesia when given intravenously in propylene glycol solution or injected into the peritoneum. Progesterone, desoxycorticosterone acetate, androsterone, testosterone, and methyltestosterone were found to be active, the activity decreasing in the order in which the compounds are mentioned here. Estradiol and the artificial oestrogen, stilbestrol are still less active but have a clearly demonstrable action. Aqueous

adrenal cortical extract may likewise produce anæsthesia when given in adequate doses. No ill effects were observed in two groups of rats receiving anæsthetic doses of progesterone and desoxycorticosterone, respectively, every day during two weeks. However, a certain degree of adaptation was demonstrable inasmuch as the dose had to be increased every few days to produce the same effect. Hormonally inactive steroids such as cholesterol, stigmasterol and 4⁴-cholestenone proved entirely ineffective. Partial hepatectomy greatly sensitizes the rat to the anæsthetic effect of oestrogens, androgens, progesterone and desoxycorticosterone. From this it is concluded that detoxification of these compounds probably occurs in the liver.

H. SELYE

Incidence and Nature of Tumours in Ectopic

Testes. Gilbert, J. B. and Hamilton, J. B.: *Surg., Gyn. & Obst.*, 1940, 71: 731.

The authors have taken their conclusions from 7,000 case reports of tumours of the testes. The incidence of these tumours is 0.3 per cent of male cancers, or 0.0013 per cent of living adult males in the United States. The incidence of ectopic testes (including an-, mon- and cryptorchidism in 10,000,000 adult army service males) they believe to be 0.23 per cent. Of those with ectopic testes approximately 11 per cent developed tumours: that is, about 48 times the expectation in chance association. About 98 per cent of the tumours developed in the unilaterally undescended testicle. Of those with bilateral cryptorchidism the tumours were bilateral in 26 per cent. Also, in the unilateral the incidence in the descended testicle was much higher than in bilaterally descended testicles. The authors suggest that congenital abnormalities may have much to do with the tendency to carcinogenesis rather than that the ectopic site is responsible for its occurrence. Tumours of the testes were found to occur most shortly after birth or during the period 14 to 54 years of age with the highest incidence 35 to 39 years. They note the incidence of cancer in the accessory sex organs as during the years of declining gonad activity. Orchidopexy did not prevent the development of cancer in 77 cases in later years. They insist that orchidopexic cases should be observed for a long time thereafter. Fourteen cases of abnormally placed (operatively) testes developed tumours with a very high percentage of inoperability. The authors were able to recognize only the unicellular and mixed tumours and insufficient data were available to classify their percentage; teratoid tumours were found twice as frequently in the scrotum as in ectopic sites. The survival rate was 50 per cent shorter in ectopic tumours.

Note.—There is no reference to the site of undescended testicles (see Browne, *Brit. M. J.*, 1938, 2: 169).

FRANK DORRANCE

Changes in the Adrenals of Gonadectomized Male and Female Rats, Produced by Prolonged Injections of Sex Hormones. Hall, R.: *J. Pathol. & Bacteriol.*, 1940, 51: 75.

In 88 male and 101 female rats the adrenals were examined. Fifty-eight males and 80 females were injected with various sex hormones after gonadectomization, and the remainder were used as controls. The average period was 87 days for females and 105 for males. The male hormones were injected 5 times a week and œstradiol esters usually 3 times a week.

(Estrogens in both sexes induced in the zona reticularis cellular atrophy, fibrous degeneration and hyperæmia; in the zona glomerulosa, narrowing; and in most cases decrease in the lipid content of all zones of the cortex. Islets of "reticularis boundary cells" appeared. All the male hormones restored, in both sexes, complete or partial normality in size and structure. Testosterone esters caused lipid depletion and slight hyperæmia in the zona fasciculata. When male hormones and œstrogens were injected together, in both sexes, the male hormones prevented, partially or completely, the degenerative changes induced by œstradiol, dehydroandrosterone having the weakest, and testosterone esters the strongest, effect. Long-term injections of male sex hormones produced rather less pronounced changes than those of shorter duration.

C. C. MACKLIN

Obituaries

Dr. Percy James Sandys Bird, of Weyburn, a well-known figure in medical circles in Saskatchewan, died on November 18, 1940, following a brief illness.

Born in Dublin, Ireland in 1876, Dr. Bird obtained his B.A. at Trinity University in 1897, and in 1900 graduated from Trinity College, Dublin, as doctor of medicine. In 1909 he came to Canada and settled in the Willow Bunch district, where he lived and practised until the outbreak of the Great War. He enlisted in the R.A.F.C. and served overseas, returning to Canada in 1919 with the rank of major. On his return he was stationed at Ste. Anne de Bellevue, Quebec, and at Halifax for a few months. In 1920 he was appointed superintendent of the military hospital in the Earl Grey school in Regina. In 1921 another appointment came to him, in the position of superintendent of the mental hospital at Battleford, and one year later of the mental hospital at Weyburn, a position he held until the time of his death. During his residence at Weyburn he was for a period of three years president of the Canadian Legion, B.E.S.L., Weyburn Branch, and was superintendent of the Civil Security Corps.

Dr. Edward Cecil Burson, of Toronto, died recently, aged sixty-one years. He was a graduate of the University of Toronto (1904) and was for a number of years a teacher of clinical medicine in the University, on the staff of the Toronto General Hospital. He retired from active practice about three years ago.

Dr. Harold Gordon Craig, of Davidson, Sask., died on December 4th, at Vancouver. He was born at Bristol, Que., in 1880, the son of Rev. D. G. and Mrs.

Craig. He graduated from Queen's University Medical School in 1906.

He served an internship at Ottawa General Hospital following graduation, and, coming west, settled in Davidson in 1907, where he carried on a large surgical practice until overtaken by his last illness.

Dr. Craig was always greatly interested in military matters and had served his country in two wars. As a private soldier in the South African War and as captain in the C.A.M.C. with No. 8 Stationary Hospital, during the last Great War. A keen sportsman, a good student, and a fine surgeon, Dr. Craig will be greatly missed by a host of friends who knew him in active days.

Failing health forced him to give up practice at Davidson and to seek a quiet life at Vancouver where he hoped to regain his health. An attack of influenza a week before his death accentuated the old trouble and he succumbed December 4th.

Dr. Jean Girouard, of Longueuil, Que., died on November 12, 1940, in his eighty-fifth year.

Dr. Girouard was born at St. Benoit, Two Mountains, the son of Jean Joseph Girouard, notary and member of the Legislative Assembly before 1837, and of Marie Emelie Berthelot, daughter of Joseph Amable Berthelot, notary and sister of Mr. Justice J. A. Berthelot. He studied at Montreal College and graduated in medicine from Victoria University in 1879.

He practised his profession for a number of years at St. Philippe, Argenteuil, and Ste. Marthe, Vaudreuil, before making his home in Longueuil in 1884. A Conservative in politics, he was appointed to the Legislative Council in 1896. He was a former vice-president of the Montarville Land Co., Ltd., and member of several other directorates.

Dr. Frederick Barrington Holder, of Halifax, N.S., died recently at the Victoria General Hospital following a cerebral hæmorrhage. He was fifty years of age. Born in Georgetown, British Guiana, Dr. Holder came to Halifax as a young man. He studied at McGill University and graduated in medicine from Queen's University in 1919. In 1922 he returned to Halifax and opened an office in the north end of the city. Through the past eighteen years he has taken a warm interest in the life of his community and served it faithfully both as physician and adviser.

Dr. Frank Lincoln Kenney died on December 3, 1940, at his home in Saint John, N.B., aged seventy-five. Dr. Kenney was born in Saint John, educated at the University of New Brunswick and McGill University. He graduated from McGill University in 1888 and practised for forty-seven years in West Saint John, where he was greatly beloved. His general practice included a tremendous amount of obstetrics in which he was peculiarly successful. He took a continued interest in civic matters and was for many years a physician on the staff of the Saint John General Hospital. His position among his medical confrères was of the happiest and his quiet humour has been a by-word among physicians in New Brunswick for half a century. For the last several years Dr. Kenney suffered from chronic disease which made him an almost complete invalid. Many of his contemporaries have already passed to whatever reward is reserved for physicians, but Dr. Kenney's memory will still persist in the minds of younger men to whom he was universally kind and helpful.

Dr. William Kerr, of Toronto, died on November 18, 1940, in his eighty-second year. Born in Galt, September 27, 1859, Dr. Kerr was the son of William Kerr and Ann Thompson. He graduated from Trinity Medical College, Toronto, in 1889, and for a time practised at Cayuga and Dunnville, before setting up practice in Toronto. He retired from active practice some years ago.

Dr. George Nelson Murphy, of St. John's, Nfld., died on November 18, 1940. He was seventy years of age. Dr. Murphy was an eye, ear, and nose specialist and a graduate of Dalhousie University (1895). He did post-graduate work at the Bellevue Hospital Medical School. He had practised his profession in St. John's since 1901. During this time he served a term as president of the Newfoundland Medical Society.

Dr. Andrew Everett Porter, of Edmonton, Alta., who drove from Winnipeg to Prince Albert by buckboard in 1878 and began the first general practice west of Portage la Prairie, died at his home on December 7, 1940.

Dr. Porter was with Lieutenant-Governor Laird when the latter attempted to make a treaty with Big Bear in 1878, and shared in the suppression of the Riel Rebellion in 1885. He graduated from Prince of Wales College, Charlottetown, P.E.I., and took his medical degree from the University of Pennsylvania (1876).

Lt.-Col. Thomas Bedford Richardson, of Toronto, died on December 1, 1940, in his seventy-third year. Colonel Richardson was born at Waterdown, Ont., son of the late Rev. George Richardson, a Methodist minister. He graduated from Trinity College, Toronto, in 1890, and spent some time in post-graduate work in Scotland, where he was made a Fellow of the Royal College of Surgeons, Edinburgh, in 1894. Following a few years' medical practice in San Francisco, he came to Toronto to engage in private practice until the outbreak of the first Great War.

He was on the staff of the Canadian Army Medical Corps, O.C. No. 10 Field Ambulance. From May 4, 1915, to November 19, 1916, he was officer commanding Camp Hospital, M.D. No. 2, and from February 20 to June 28, 1917, was with the headquarters staff, mobilization centre, Sudbury. He was with the British Recruiting Mission, Chicago, from July 1 to October 16, 1917. Returning to Toronto in 1917, he was appointed to the Pensions Commission and served until 1929. He was on the staff of the Christie St. Hospital.

A talented singer in his younger days, Colonel Richardson was one of the original members of the Toronto Mendelssohn Choir. He composed a number of songs and instrumental selections, and played the organ and the 'cello. Wood carving was a special hobby.

Dr. James Frederick Rigg, of Niagara-on-the-Lake, Ont., died on November 14, 1940. He was born in 1888, and a graduate of the University of Toronto (1911).

Dr. William Kerr Skinner, of the Ontario Hospital, Kingston, died on October 13, 1940. He was a graduate of McGill University (1923).

Dr. Richard Frank Trimble, of Windsor, Ont., died at Tucson, Ariz., on November 9, 1940, aged forty-six. Dr. Trimble was born in Gosfield North, a son of Mr. and Mrs. John Trimble, of South Woodslee, and after receiving his early schooling in the township schools, attended Essex High School and then graduated in medicine from the University of Toronto (1923). He had practised in Windsor for the past seventeen years.

Dr. Arthur Gladstone Wallis, of St. Catharines, Ont., died on November 18, 1940. He was a graduate of the University of Toronto (1905).

Dear little fleeting soul of mine; my sometime guest and comrade. Now whither wilt? To what unknown climes wilt thou go, so pale, and cold, and tiny as thou art, forgetting thy former playful ways, a stranger now to mirth.—The Emperor Hadrian.

News Items

Alberta

The Hon. W. W. Cross, M.D., Minister of Health, has announced that, commencing with January 1, 1941, all patients with curable cancer will be given free treatment both as to radium and x-ray. Outlining the steps the Government hopes to take as time progresses, Dr. Cross said, the second step would be free surgery treatment, the third, hospitalization, and the fourth free transportation of patients to clinical centres. He did not favour free treatment of incurable cancer as he says it is a waste of public money. Dr. Cross further said that the Government had been successful in obtaining the services of one of Canada's greatest radiologists, who already had the benefit of wide investigation of cancer treatment in many parts of Europe and America.

At the Annual Convention of the Labour Party held in Alberta recently, a resolution of protest was passed against the action of the Workman's Compensation Board, in refusing to accept cases where the injured workman did not report the accident to a representative of industry on the day the accident happened.

Elections are being held in the even-numbered constituencies for representation on the Council for the years 1941-1942. In each case the sitting member has consented to stand for re-election. In Calgary riding as only one candidate accepted nomination, Dr. R. B. Francis was re-elected by acclamation. Two candidates are running in the Camrose district and three in the Lethbridge district.

Alberta still has reciprocity with the British Medical Council. This latter body is prepared to enter on the Colonial list the name of all bona-fide Canadian provincial registrants whether they be Canadians or citizens of the United States. These temporary registrants will not be registered in Alberta through reciprocity, the Alberta Council recently decided.

This Alberta Board has submitted to the Council of the College of Physicians and Surgeons a tentative revised schedule of fees for medical services to injured workmen. The Council is asked to study this and report back to the Board for a general discussion before anything definite is adopted.

The Attorney-General's Department has adopted two different fees for post-mortem examinations where pathologist specialists do the work. The fee is \$15.00, but the ordinary practitioner is allowed only \$10.00.

The University Registrar has called a special meeting of the Specialists' Committee to consider the application for standing of several Alberta applicants.

The College of Physicians and Surgeons announce the following registrants: Cecil Alexander Berjansky, Bashaw; Frederick Wynne, High River; Philip Aron Edwards, Port O'Spain; Roy Watson Culver, Calgary; William Laurence Chisholm, Edson; Angeline Isabelle Philappina, Wiegierinck, St. Paul; George Peter Mores, Calgary; James Oliver Anderson, Edmonton; Norman Scott Park, Calgary; Ebba Sorensen, Holden; Elmer Hector McFadyen, Exshaw; Charles Winston Jaron, Foremost; Thomas Rushton Blades, Lake Louise; Douglas Robert Stuart Milne, Vancouver, B.C.; Eldon Thomas Green, Royalties; Maxwell Mordicai Cantor, Edmonton.

G. E. LEARMONTH

British Columbia

The Committee on the Study of Cancer of the British Columbia Medical Association is very active and is holding regular meetings each month. Several sub-committees have been appointed, and amongst these we notice especially a Committee on Biopsy Service, headed by two pathologists, Drs. H. H. Pitts and A. Y. McNair, and

one on Public Health Relations, headed by Dr. J. S. Kitching, of the Metropolitan Health Board of Vancouver. This latter enlists the active co-operation of the Public Health section of the medical profession with the therapeutic section, and this is decidedly a step in the right direction.

In line with this work on cancer, too, is the recent meeting of the Honorary Attending Staff of the British Columbia Cancer Institute, which held its first open meeting in the Institute on November 25th. A symposium on "Fundamental principles in the treatment of cancer" was held and aroused considerable interest.

The Medical Services Association, of which we have written before, is being quite active and several firms have enrolled as contributing members of the Association. Forty per cent of the active profession has actually signed up as willing to undertake this work, but there is no doubt that a much larger percentage is perfectly willing to do the work and has merely omitted to fill out the forms provided for the purpose of enrolment, and this is being hastened by the Association.

The Medical Services Association has adopted the principle that while at the moment solicitation of membership will be confined to the Greater Vancouver and New Westminster areas, nevertheless, if employee groups in other areas in British Columbia make applications for membership these will be accepted.

The recent meeting of the Legislature of British Columbia passed off quietly as regards the medical profession, but one or two of the members took occasion to make a few minor attacks. The Medical Act had been opened for some minor amendments, much needed, and the usual accusations of "closed corporation", "medical trust", were hurled at us, chiefly by members who themselves belong or have belonged to labour unions, whose idea seems to be that water-tight union is a virtue and a necessity in their own case, but a menace to public welfare if attempted by any other group in a community. The Attorney-General, the Honourable Gordon Wismer, sponsored these amendments and the Honourable R. L. Maitland, leader of the opposition, supported them. The question of Health Insurance was mentioned once or twice, during the session, but it is obviously not a very live topic at the moment.

Dr. A. B. Nash, of Victoria, recently gave a paper on "The Manchester operation for genital prolapse" at the Annual Meeting of the Pacific Coast Society of Obstetrics and Gynaecology in San Francisco.

Dr. R. P. Borden, formerly of Penticton, is now serving with the R.C.A.M.C. Captain Borden is stationed at Victoria.

Dr. P. L. Straith, of Courtenay, who has recently been ill, is now recovering rapidly.

The wedding took place recently in St. Paul's Naval and Garrison Church, Esquimalt, of Capt. F. H. Stringer, R.C.A.M.C. and Miss Alfreda Thompson, daughter of the late Dr. Alfred Thompson of the Yukon and Vancouver.

J. H. MACDERMOT

Manitoba

At the annual meeting of the Union of Manitoba Municipalities Dr. Gordon Fahrni, Chairman of the Honorary Attending Staff of the Winnipeg General Hospital, championed the cause of the hospitals which provide extra services. These services, while burdening the hospital with additional expense, were made necessary by advances in medical science. The effect of these extra services was to lessen the number of days of hospitalization and to reduce the mortality rate. The proposal made was that a small additional charge, estimated at 21 cents per patient per day, be made to municipalities for all public ward patients in hospitals equipped to meet these

extra services. This proposal, however, was defeated, and free hospitalization for public ward patients to be financed through a sales tax on food and clothing was recommended in its place.

The executive of the Union of Manitoba Municipalities was instructed to study the question of a contributory plan of state medicine. The executive will appoint a special committee to make the study and the committee will report its findings to the annual meeting next year.

Dr. E. L. Ross, Superintendent of Manitoba Sanatorium, pointed out the serious deficits of the Sanatorium Board which are caused by the inadequacy of the municipal levy. While it cost the Sanatorium Board \$2.16 per day for every patient treated for tuberculosis from the levy area, the board receives only \$1.68 per patient day, this including the government per capita grant of 50 cents per day.

Dr. P. A. Macdonald told of the work being done by the Cancer Relief and Research Institute. The public must be educated to recognize early symptoms and take immediate treatment. There is a steady increase in the number of cancer recoveries, but in many cases early diagnosis is neglected, due to fear.

On December 10th Dr. T. C. Routley, General Secretary of the Canadian Medical Association met the local committee charged with the duty of drawing up a program for the annual meeting to be held in Winnipeg next June. Though a complete and final program naturally could not be announced, the result promises to be of much interest.

The Winnipeg School Board is on the lookout for a full-time school doctor to replace Dr. Mary E. Crawford who will retire in January. The Board considers that the physician chosen should possess a good knowledge of psychology.

The will of the late Edward L. Drewry included bequests to the Margaret Scott Nursing Mission and to the Manitoba Sanatorium.

On December 12th the honorary attending staff of the Winnipeg General Hospital approved a scheme of reorganization of the staff. The scheme will enable the staff to take a larger part in the administration of the hospital. It was recommended to the Board of Trustees that the Chairman of the Staff and the Chairman of the Committee on Staff Appointments be represented on the Board of Trustees.

ROSS MITCHELL

New Brunswick

The Engineering Faculty of Dalhousie University is establishing a memorial in the name of Robert Walter, son of Lt.-Col. A. B. Walter, of Saint John. Robert Walter was killed recently in a hunting accident. This memorial is established with emphasis on character, sportsmanship and leadership and is to take the form of a yearly award.

Dr. George M. White, of Saint John, has been elected President of the Saint John Branch of the Canadian Legion B.E.S.L.

In recent months a number of physicians are registered for the first time in the Province of New Brunswick. Among them are: Dr. R. E. Pothier at Dalhousie; Dr. Robert Marcoux at Buctouche; Dr. T. E. Grant at Saint John, and Drs. J. Stewart and R. H. Cox at Moncton.

A. STANLEY KIRKLAND

Nova Scotia

The meetings of the Halifax Medical Society have shrunk from bimonthly to monthly, a measure of medical war economy.

Employees of the Louisburg shipping piers called at a United Mine Workers meeting for assistance in bringing a doctor to Louisburg. Dr. Henry Townsend, physician to the fortress town, has joined the army.

A new military hospital of 100 beds has opened at Sydney adjacent to the City of Sydney Hospital.

The Western Nova Scotia Medical Society held its autumn meeting at Yarmouth. President P. E. Belliveau was in the chair. Scientific presentations were made by Dr. J. S. Robertson and Dr. T. A. Lebbetter, of Yarmouth.

Dr. T. C. Sodero (Dal., 1935), Guysboro, has gone to the Toronto General Hospital for post-graduate work. His practice is being taken by Dr. Edwin D. Levittan.

For the first time in its history the Yarmouth Hospital reported an operating surplus for the year; net profit, \$17.09.

Bowed beneath the added duty of military service, Dalhousie medical students made voluble protest with the approach of first-term examinations. The Dean had no power to reduce the service; he did cut down the classes.

The donning of khaki by Dr. C. O. Homans, Hubbards, leaves a forty-five mile strip of Nova Scotia's south shore, from Halifax to Chester without a doctor.

A victim of epilepsy, a Halifax autoist who "hit and ran", was freed of the serious charge on the expert testimony of a physician who described his actions as being done in a post-epileptic automatism, following a *petit mal*. Neither prosecution nor defence raised the question of whether such a driver was entitled to a licence.

ARTHUR L. MURPHY

Ontario

The result of the recent quadrennial election of the College of Physicians and Surgeons of Ontario is announced as follows: Division No. 1—C. S. Sanborn, M.D., Windsor, by acclamation; No. 2—J. H. Geddes, M.D., London; No. 3—J. McQueen, M.D., C.M., Galt, by acclamation; No. 4—W. F. Nicholson, M.B., Hamilton, by acclamation; No. 5—G. L. Macdougall, M.B., Whitby, by acclamation; No. 6—A. Moir, M.B., Peterborough, by acclamation; No. 7—J. F. Argue, M.D., C.M., Ottawa, by acclamation; No. 8—R. P. Smith, M.B., South Porcupine, by acclamation; No. 9—M. H. V. Cameron, M.B., Toronto; J. R. Stewart, M.D., C.M., Toronto.

University Representatives are: Queen's—F. Etherington, M.D., C.M., Kingston; Toronto—E. S. Ryerson, M.D., C.M., Toronto; Western Ontario—G. A. Ramsay, M.D., London.

Dr. Robert D. Defries has been appointed Director of the School of Hygiene in the University of Toronto, and of the Connaught Laboratories, to succeed the late Dr. J. G. Fitzgerald. Dr. Defries has been Acting Director of these two institutions during the past two years and has been on the Staff of the Connaught Laboratories since 1915. In the University of Toronto he has held the post of Professor of Hygiene and Epidemiology.

Adding to the many services it already provides, the Red Cross will train volunteers for office administration service. Applicants must be pronounced medically fit and must be willing to serve voluntarily. They will be outfitted in a uniform of grey with green tie and grey hat and shoes.

Last month a further demonstration of the training given by the St. John Ambulance Brigade was afforded an audience at the Varsity Arena, when firefighting, demolition, and first-aid work formed part of an exhibit of civilian preparedness given by that organization. It is announced that over 50 ambulance sisters from the

Central Division took their first A.R.P. examinations in December.

The Ontario Commission for the Investigation of Cancer Remedies have issued a report of their investigation into Ensol, the treatment which is being developed and studied by Dr. Hendry Connell and his associates in Kingston. The Commission believed Ensol, used according to directions, is harmless, that it is suitable for use in conjunction with other recognized methods of treatment, and expressed the opinion that it has produced beneficial results in a fairly large percentage of patients suffering from cancer. The Commission pointed out that it is too early to justify the acceptance of Ensol to the exclusion of standard recognized procedures, and the ultimate estimate of its value will have to await the result of further research.

The College of Physicians and Surgeons of Ontario has been advised by the General Medical Council of Great Britain that temporary licence to practise in Great Britain will be granted to those registered for practice in the Province of Ontario. This notification will force the Medical Council of Ontario to consider the status to be granted in Ontario to physicians who are on the British Register.

Dr. W. L. Bierring, Past-president of the American Medical Association, was guest speaker at the annual banquet of the Medical School of the University of Western Ontario on November 29th. The other guest speaker was Dr. Louis B. Wilson, Director of the Graduate School of the Mayo Foundation.

Dr. Charles Best, Professor of Physiology, University of Toronto, gave the Harvey Lecture to the Harvey Society in New York. His subject was, "Heparin and thrombosis".

The Provincial Department of Health has been much encouraged by the results achieved in their work in the prevention of venereal disease. The Honourable H. J. Kirby, Minister of Health, has announced that in the future the Department will place much emphasis on treatment. Following a survey conducted by Dr. W. H. Avery, Consultant to the Department, more adequate provision will be made for prompt diagnosis and there will be further provision for suitable treatment, including fever therapy. It is expected that practically all of the larger general hospitals in Toronto and other cities will supply fever treatment which will be available for both pay and indigent patients. The Department has been gratified at the results of treatment which has been undertaken in the Ontario Hospitals.

Dr. W. H. Hills, who has been on the Staff of the Burwash Jail Farm, is being transferred to Dr. Avery's Staff in the Venereal Diseases Prevention Division.

Dr. C. A. Wicks, formerly Inspector in the Tuberculosis Prevention Division of the Department of Health, and more recently in charge of medical services for the Mothers' Allowances Board, has been appointed by the Board of Governors of the Brant Sanatorium, Brantford, as Superintendent.

Dr. A. L. McKay, formerly Director of Venereal Disease Prevention Division, will succeed Dr. Wicks in the Tuberculosis Prevention Division.

At the December meeting of the Senate of the University of Toronto J. Clifford Richardson, M.D., M.R.C.P., was awarded the Reeve Prize in the Faculty of Medicine.

Dr. C. H. Best, Professor of Physiology in the University of Toronto, has been honoured by being appointed a Scientific Director of the International Health Division of the Rockefeller Foundation. Five Directors, four Americans and one Canadian, direct the World Health Service of the Rockefeller Foundation.

The Department of Physiotherapy at the University of Toronto has had a notable increase in registration,

due doubtless to war conditions. Usually 6 to 15 enrolled in each of the years, two years' course. This year there are 43 in 1st year and 33 in 2nd year. J. H. ELLIOTT

Quebec

Le décanat de la faculté de médecine de l'université Laval, vacant depuis la mort du docteur Calixte Dagneau, vient d'être récemment assigné au docteur Charles Vézina. Le docteur Vézina est bien connu à travers le Canada aussi bien pour ses travaux scientifiques que pour ses qualités d'organisateur. Il a l'estime et l'admiration de tous ses collègues de la faculté de médecine de Laval.

La société d'électro-radiologie canadienne française a élu en septembre dernier, pour deux années, les officiers suivants: Dr Albert Comtois, président; Dr Jules Gosselin, premier vice-président; Dr Paul Brodeur, deuxième vice-président; Origène Dufresne, secrétaire-général; Doriva Léonard, trésorier-général; Hervé Lacharité (Montréal) et Mathieu Samson (Québec), sous-secrétaires; L. R. Payeur, sous-trésorier; L. A. Gagnier, J. E. Perron, Rosario Potvin et J. E. Gendreau, directeurs.

La journée médicale annuelle de l'association franco-américaine tenait cette année ses assises à Boston. L'élection du nouvel exécutif a donné la résultat suivant: *Président honoraire*—Docteur J. C. E. Tassé, Worcester, Mass.; *Président*—Docteur J. Ubalde Paquin, N-Bedford; *1er Vice-Président*—Docteur A. J. B. Falcon, Pawtucket, R.I.; *2e Vice-Président*—Docteur Omer E. Boivin, Fall-River; *Ex-Président*—Docteur L. Eugène Larochelle, Manchester; *Trésorier*—Docteur Eugène W. Beauchamp, Chicopee; *Secrétaire permanent*—Docteur Henri E. Gauthier, Woonsocket, R. A.

Le docteur Jean Tremblay, chirurgien de l'hôpital Notre-Dame de Montréal a été nommé président de la société d'orthopédie de Montréal et "Fellow of the American Association for Surgery and Trauma", section de l'American College of Surgeons.

Le docteur Wilbrod Bonin, professeur agrégé à la faculté de médecine de l'Université de Montréal, a gagné le premier prix de \$800., des concours littéraires et scientifiques du gouvernement provincial, section sciences, par un travail intitulé: "Etude anatomique du système nerveux périphérique et des organes des sens de la tête chez l'embryon d'Amia Calva. Origine épiblastique des ganglions sensitifs crâniens."

Le Conseil de la faculté de médecine de l'Université de Montréal a confié le cours de Pathologie médicale au docteur Albert DeGuise, médecin de l'hôpital Notre-Dame, et celui de Matière médicale et de Thérapeutique au docteur J. A. Mousseau, médecin de l'Hôtel-Dieu, (Montréal).

Le docteur Florian Trempe a été nommé chef du service de chirurgie à l'hôpital du St-Sacrement de Québec, et professeur titulaire de clinique chirurgicale en remplacement de feu le Dr. P. C. Dagneau.

Le Dr Henri Laugier, professeur à l'Université de Paris, a donné sous les auspices conjointes de l'Institut scientifique franco-canadien et de la faculté des sciences de l'Université de Montréal, les 12 et 13 décembre derniers, les deux conférences suivantes: "La biologie humaine et l'aviation". "La biologie humaine et l'organisation scientifique du travail." JEAN SAUCIER

"La Société Médicale de Montréal", the oldest medical society in Montreal among the French-speaking Canadians, held on December 17th its annual meeting at the Hôtel-Dieu Hospital, when a new Executive Board was elected for 1941.

This Executive is as follows: *President*—Dr. Hector Sanche; *Vice-president*—Dr. G. L. Prud'homme; *General Secretary-treasurer*—Dr. Paul Letondal, re-elected for a third term.

After the election, a scientific program was given by Drs. Rolland Blais, Jean-Paul Legault, J.-H. Legendre, Charles Mathieu, Charles Lefrançois and Georges E. Cartier.

Dr. Paul Letondal outlined in his annual report the increasing activities of "La Société Médicale de Montréal". He pointed out the fact that the Society has commemorated this year the 40th anniversary of its foundation by holding a Clinical Convention of four days and a joint banquet with the "Montreal Medical-Chirurgical Society".

The meeting was closed by an address by the Past-president, Dr. Oscar Mercier, thanking all those who have contributed to the success of the present year.

The Governors of the Royal Victoria Hospital, Montreal, extend to visiting doctors a cordial welcome and invite them to use the hospital and to participate in the post-graduate activities which have been arranged for them by the Medical Staff. A full range of medical, surgical and special subjects is offered.

In addition to regular publications a program of special activities is issued monthly and may be obtained from Dr. H. P. Wright, Chairman of the Post-graduate Board.

The Royal Victoria Hospital, Montreal, has announced the appointment of Doctor Jean Bouchard, D.M.R.E., of the Hotel Dieu, Quebec City, as Assistant Radiologist to succeed Dr. William W. Bryan. Dr. Bryan has resigned to take charge of the X-ray and Radium Department of the Victoria Hospital, London, Ont., on January 1, 1941, as the Radiologist-in-Chief of that institution and the Professor of Radiology in the Faculty of Medicine, University of Western Ontario.

Dr. Bouchard was educated in the schools of his native city, Quebec, and received his doctor's degree in medicine with honours from the Faculté de Médecine, Université Laval, in 1934. Following an internship at the Hotel Dieu of Quebec he continued his graduate studies in radiology at Cambridge University, England, for the Diploma in Medical Radiology and Electrolgy. Since 1937 he has been Assistant Radiologist of the Hotel Dieu of Quebec under Dr. A. Potvin.

In commenting on the announcement, Dr. Carleton B. Peirce, the Radiologist-in-Chief of the Royal Victoria Hospital said, "The Victoria Hospital in London and the University of Western Ontario are to be congratulated on their selection of Dr. Bryan. We shall miss him very much. But we consider ourselves fortunate in Dr. Bouchard's acceptance of the appointment here."

Saskatchewan

Dr. A. W. Argue, of Grenfell, has accepted the position of registrar for the College of Physicians and Surgeons for Saskatchewan. He is assuming this office for the duration of the war, the present registrar, Dr. J. G. K. Lindsay, having enlisted for active service.

Dr. Argue is one of the early pioneers of Grenfell. He is a graduate of Manitoba Medical College and has practised medicine in Grenfell and district for the past forty-four years. He has been a member of the medical councils, Provincial and Dominion, for many years. He is also on the board of governors of the University of Saskatchewan.

Osler day was celebrated in Regina by a dinner meeting of the Regina and District Medical Society. The Osler address was given by Dr. F. C. Heal, of Moose Jaw, the subject being "Lung abscess".

LILLIAN A. CHASE

Book Reviews

Modern Medical Therapy in General Practice. Edited by D. P. Barr. 3 vols. 3661 pp., illust. \$38.50. University of Toronto Press, 1940.

The object of these large volumes is to describe and discuss the non-surgical treatment of disease. One hundred and six authors contribute to the writing of the many articles which cover all the fields of medicine and its allied branches. Volume one treats of general therapy, diseases of metabolism, allergy, deficiency diseases, diseases due to physical agents, chemical agents and intoxications; Volume II—infectious diseases, diseases of the nervous system and gastro-intestinal tract and Volume III—diseases of other organs and systems.

Practically every condition known is covered in the 3,563 pages. Many of the authors are authorities in their respective fields and their topics are handled in an exceptionally fine manner. A number of articles, however, have been written by a group of younger men and these are more or less adequate reviews of the literature on the subject. The three volumes contain many references and illustrations, also a large number of prescriptions and outlines of diets, where the latter are indicated. The food tables and those classifying sources of light are especially valuable. The scope of the three volumes is rather abundant for the average general practitioner but this in part has been overcome by an adequate index. Each volume weighs approximately 5 pounds and for this reason is somewhat cumbersome to read except at a desk.

The work presents an immense storehouse of information and guidance for all those who are concerned with therapeutic advances and those procedures which have stood the test of time.

Rheumatic Fever. M. G. Wilson. 595 pp. \$4.50. Commonwealth Fund, New York, 1940.

This is a monumental work, describing the author's study of rheumatic fever and giving a review of the clinical manifestations in individuals who have been observed over three decades of life. The book covers a huge bibliography, and contains many graphs and tables based on large groups of patients. There is no acceptance without critical review of other work, and some previously accepted opinions would appear to rest on a less sure foundation than has been thought.

As a critical review of recent studies of rheumatic fever, the work is excellent. It is, of course, not to be recommended as a textbook for students or practitioners, but it is worthy of close study and reference by those who are particularly interested in the etiology and development of the various manifestations of rheumatic fever.

The Surgery of the Alimentary Canal. H. Devine. 1046 pp., illust. \$18.00. Macmillan, Toronto, 1940.

The author presents his views on the surgery of the alimentary tract in an interesting and stimulating fashion. These views are based on a wealth of clinical material, and are illustrated by appropriate citations of case histories. His originality of thought adds to the interest of the book, even though occasionally some of his ideas are at variance with generally accepted concepts. For example, one can hardly agree that the cases cited in support of active dilatation of the duodenum as the cause of duodenal stasis are adequate proof that this entity is not due to a mechanical obstruction of the duodenum.

The author places great emphasis on the localized deep tender spot in the detection of organic intra-abdominal disease. In the matter of surgical technique the book is especially stimulating. The author's technique of gastro-enterostomy appears to have merit and is worthy of careful consideration. His operation of partial gastric exclusion for complicated duodenal and pre-pyloric ulceration is physiologically unsound. Many surgeons who were at first impressed by the possible usefulness of the procedure have been forced by experi-

ence to change their opinion of it. On the other hand, the Devine operation for defunctioning the distal colon has many strong advocates. As a preliminary step to anterior resection of carcinoma of the sigmoid and recto-sigmoid it possesses many advantages over the usual transverse colostomy.

Post-operative distension may be treated by means of the Einhorn tube as suggested by the author, but it is probably better dealt with by positive suction, as advocated by Wargenstein.

The book is readable and thought-provoking. It will be of special interest to gastro-enterologists and surgeons of some experience who are able to read it critically.

The Foot and Ankle. P. Lewin. 620 pp., illust., \$10.00. Macmillan, Toronto, 1940.

In the foreword Dr. Morris Fishbein justifies the volume and thinks that Doctor Lewin has accumulated a mass of information on the subject and has supplemented this knowledge with many years of study, research, teaching and practice.

The first three chapters deal with the anatomy, embryology, physiology and the basic principles of foot and ankle disturbances. In this section the development of the foot in different races is traced and the changes noted that take place because of different functions. There is also a good classification for teaching purposes of the lesions and defects of the foot and ankle. There is also another important section which deals with the foot in the growing child. There is a good section on manipulative surgery and the ambulatory treatment of surgical foot and ankle conditions. All these sections are well and clearly illustrated.

The subsequent twenty chapters deal with orthopaedic conditions of the foot, and in addition take up affections of skin, nerves and blood-vessels so far as they have a relation with the foot. Here the treatment suggested is sound and somewhat conservative, but due recognition is given to the latest operative procedures as well as to the better known and older and well established procedures. Frequent references are made to well-known orthopaedists and their individual modifications of procedures outlined. The author deals with open reduction of fractures and different fixation methods.

The last few chapters deal with care of the feet during and after pregnancy and prolonged illnesses, the technique of the application of plaster casts, and the technique of manipulation.

The tone of the book throughout is high. The treatment indicated is sound and for the most part well established. The text is clear and the steps of the operative procedures are easy to follow. The sketches are of great value in this respect. The x-ray reproductions are well chosen to illustrate the different subjects.

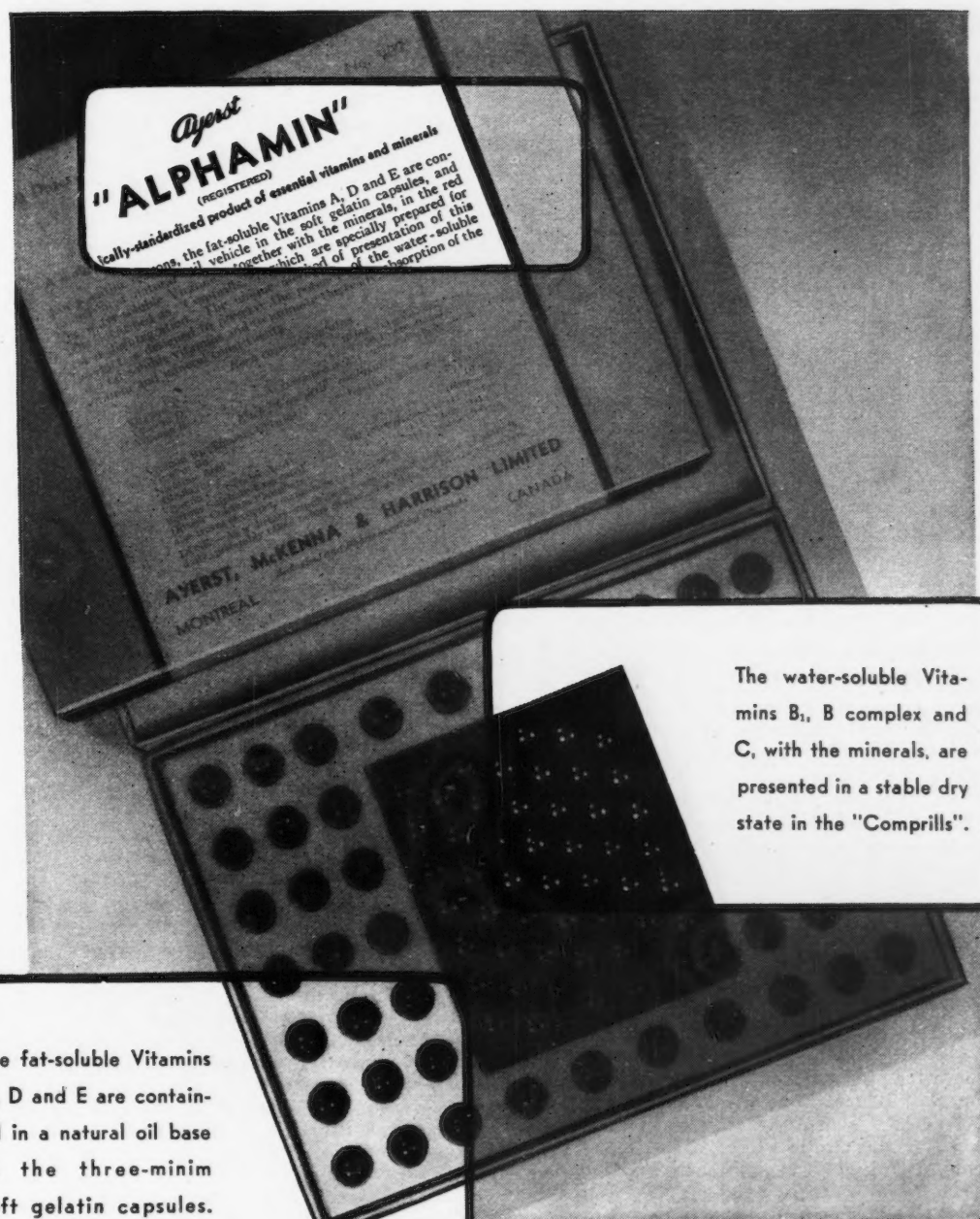
The book on the whole is perhaps of more interest to the orthopaedic surgeon, but it is also of great value to the general surgeon and to the military surgeon.

Dynamics of Inflammation. V. Menkin. 244 pp. \$5.00. Macmillan, Toronto, 1940.

This is one of a series of Experimental Biology Monographs dealing with experimental contributions to this field.

The author discusses systematically the mechanism of inflammation. The material presented is largely the result of his own researches carried out in the department of pathology of Harvard University. The dynamics of capillary filtration and the changes in capillary pressure and permeability resulting from inflammation are dealt with.

The author reports his own observations on the rôle of leukotaxine in bringing about changes in capillary permeability and causing migration of leucocytes at the site of inflammation. The method of isolation of leukotaxine from inflammatory exudates is described. The chemical changes occurring in inflammatory exudates are correlated with cellular changes in a series of careful experiments on pH determinations and cell studies. The relationship of inflammation to immunity and the part



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played by fibrin in the localization of acute inflammation are discussed.

This is a stimulating book which visualizes the inflammatory process as an orderly mechanism and throws interesting new light on its chemical aspects. The volume is well illustrated and carries an excellent bibliography. The pathologist, the biochemist and the physician who aims to interpret disease in terms of applied physiology will find this book invaluable.

Principles of Hematology. Edited by R. L. Haden. 2nd ed., 362 pp., illust. \$5.00. Macmillan, Toronto, 1940.

The second edition of this book, one year after the first, attests to its popularity and excellence. The book has been lengthened by 14 pages and 12 illustrations have been added. The material is presented in terms of physiology of the blood and its pathological variation. The technique of supravital staining, biopsy and bone marrow puncture has been omitted, since Haden feels the average physician should not attempt the complicated case which is often undiagnosed by the hematologist. All conditions are illustrated in case reports, and these in themselves serve as an excellent post-graduate review. The book is a fine introduction to hematology for medical students and practitioners. It is simple and attempts to standardize many variable features which are confusing to the physician.

Handbook of Hearing Aids. A. F. Niemoeller. 156 pp. \$3.00. Harvest House, New York, 1940.

People who are deaf or getting so are in need of a reliable practical guide, such as this little work, which will enable them to select the hearing apparatus best suited to their individual needs. The various types of the aids to hearing now on the market, good and bad, useful and useless, are described and their value assessed. Information as to their use, testing, and care is presented. This book gives practical assistance, is timely, and will save money for those afflicted with deafness.

Complete Guide for the Deafened. A. F. Niemoeller. 256 pp. \$3.00. Harvest House, New York, 1940.

This book is much more comprehensive than the "Handbook of Hearing Aids" by the same author, and, in fact, should be regarded as a supplement to that useful work. It deals very little with apparatus and much more with the condition of deafness itself. Further, it is intended for the information of the hard of hearing rather than the deaf. A brief description of the anatomy and physiology of the ear is given. The causes of impaired hearing are discussed and much good advice is given to the sufferer as to how he may make the best of a poor situation. The book can be recommended to those needing such a guide, and, indeed, will be of assistance also to the medical man who is asked to give advice on the handling of a very common condition.

The Fundamentals of Nutrition. E. E. Hawley and E. E. Maurer-Mast. 477 pp., illust. \$5.00. C. C. Thomas, Springfield, 1940.

Preventive Medicine will gradually, no doubt, replace a greater part of the healing art, and the instruction of the fundamentals of nutrition is therefore becoming of great importance. Many forms of disease are caused by deficiency of one or more substances of food required to keep one healthy, and a knowledge of foodstuffs and their functions is becoming more and more a part of the physician's education.

The work under review consists of discussions and technical data arranged to simplify diet work, whether for precise laboratory studies or for the broad problem of proper nutrition of the whole population at low cost. The original detailed "hundred calorie" table of foods, which includes chemical and physiological data, is used. A great deal of the book is taken up with minerals and vitamins, vitally important today for both experimental and clinical medicine.

The book is divided into five sections under the headings of: (1) Metabolism; (2) Fundamentals of Nutrition; (3) Diet Therapy; (4) Diet Planning; and, (5) The Appendix, which is of importance in itself in discussing different tests, formulas, commercial products, food hazards etc., all of great importance to the physician and student.

The book is well written, has several good illustrations, and should be well received.

Tomography. J. B. McDougall. 73 pp., illust. 21s. H. K. Lewis, London, 1940.

This book was published in an effort to present for chest physicians a series of tomograms representative of the commoner conditions. Tomography is really sectional radiography. The technical details of this type of x-ray examinations are discussed briefly. The descriptive text is brief and so perhaps difficult to follow. The illustrations are numerous. The book will perhaps be limited in its appeal to surgical chest specialists.

The Neurogenic Bladder. F. C. McLellan. 206 pp., illust. \$4.00. C. C. Thomas, Springfield, 1939.

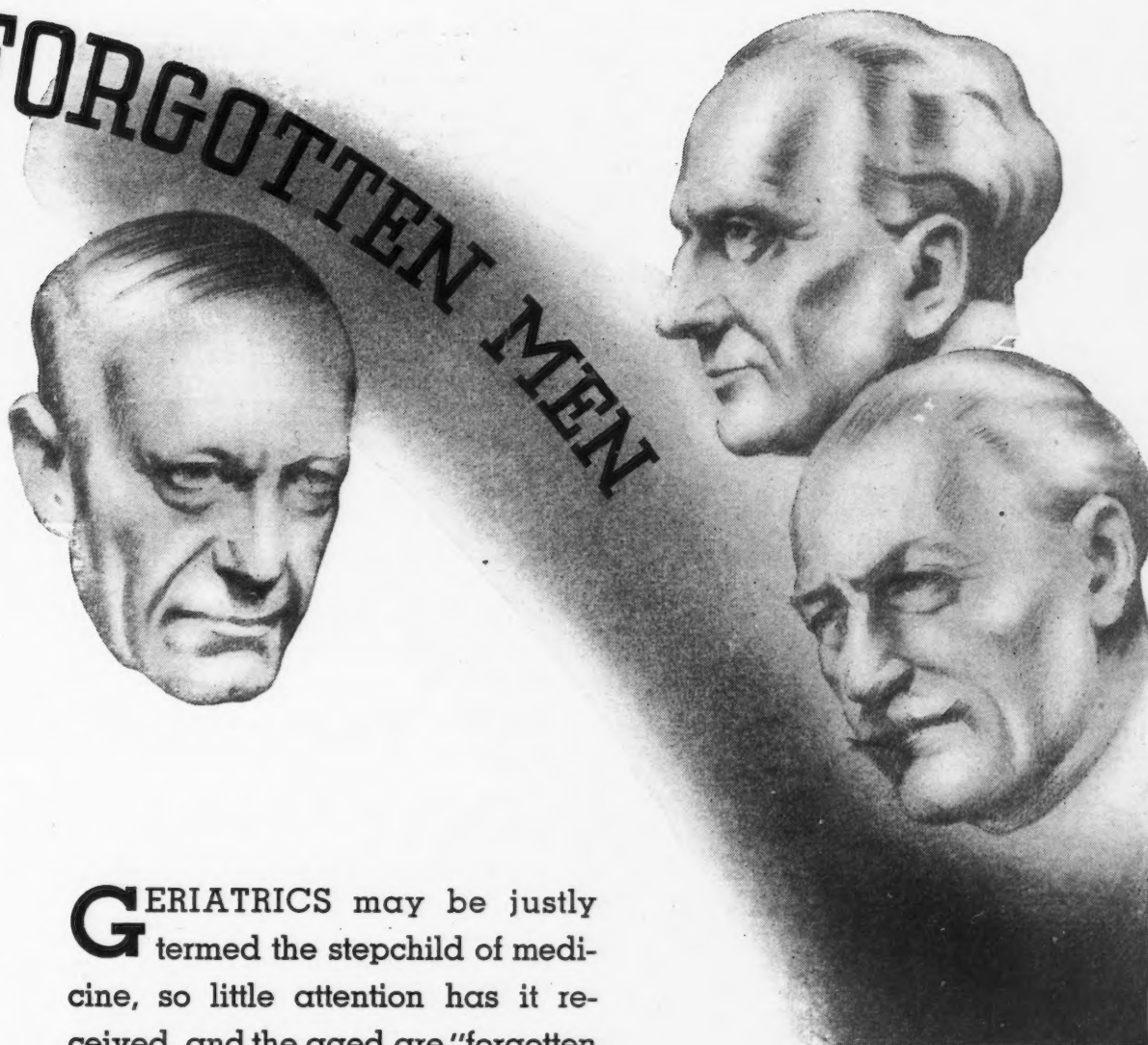
Cystometry, which is the method of studying the physiology of the bladder musculature and its abnormal behaviour in relation to disease of the central nervous system, is the subject chiefly discussed in this book. The study entails plotting of a curve from serial readings of the intravesical pressure as known amounts of fluid are flowing into the bladder. The bladder being essentially a reflex organ, by studying the sensation and pressure changes during filling, one can determine normal, abnormal, or absence of reflex activity, and can place a neurological lesion as supranuclear or infranuclear in position.

The author precedes his discussion of cystometry itself and the interpretation of the findings by a thorough review of the anatomy of the nerves of the bladder and the neurophysiology of the bladder. Working in conjunction with the departments of urology, neurology, and neurosurgery, the author made 500 cystometric studies of normal and pathological bladders. Of these, 200 showed definite evidence of neurological disturbance, and were analyzed to form the background for this study. The appendix includes a synopsis of 100 neurogenic bladders with pertinent data and forty-nine charts to illustrate the text. The principles involved in the treatment of neurogenic bladders are discussed, the author finding the results poor with the use of drugs or surgical procedures. In his experience tincture of belladonna seemed to be the only drug to give encouraging results, and he would reserve the operative procedure of presacral neurectomy only for the treatment of the autonomous neurogenic bladder. Generally, this book seems an authoritative and complete review of our present conception of neurogenic bladder disturbances and has a complete bibliography.

Psychiatric Clinics for Children. H. L. Witmer. 437 pp. \$2.50. Commonwealth Fund, New York, 1940.

The development of psychiatric clinics for children has been so rapid in the past two decades that a review of this specialized field of activity has been very much needed for some time. Dr. Witmer has rendered the profession a real service in surveying this field and in recording the different methods of approach that are now being made by these clinics. In the first part of the book a discussion is presented of the general theoretical and historical background for the development of a clinical psychiatric approach to the problems presented by children. This is followed by a detailed survey of the clinic organization, personnel, and the general procedures followed by the different types of clinical settings. The third part of the book is devoted to a presentation of the more detailed treatment procedures employed, particularly as related to the basic objectives which the individual

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clinic has. In this regard, three general tendencies are noted: (1) the prevention of psychosis and crime as a clinic objective; (2) psychiatric service for the feeble-minded and neurologically disabled; and (3) modern child guidance as a means of promoting mental health. The general philosophy which characterizes this whole book is thoroughly sound and should be exceedingly helpful not only to those who are engaged in this particular field of activity but also to the paediatrician and general practitioner.

The Public Health Nurse and Her Patient. R. Gilbert. 396 pp. \$2.25. Commonwealth Fund, New York, 1940.

The success of the public health nurse as a health teacher depends largely upon her ability to understand her own attitude and the attitude of those with whom she works.

The present volume presents a thorough discussion of the various relationships and particular problems which face the public health nurse. While it was written primarily for public health nurses, it will be almost as interesting to all those who care for the sick or who are engaged in public health work.

Hospital Organization and Management. Capt. J. E. Stone. 3rd ed., 920 pp. \$12.00. The Ryerson Press, Toronto, 1939.

The first edition of this invaluable work appeared in 1927; the second in 1932; and the third and present in 1939. When it appeared it was the first of its kind; it is still the great authority and book of reference on the subject of "Hospitals". Naturally, in thirteen years the subject has changed in scope and new problems have arisen. These are discussed with great ability and freshness. Such subjects as the various types of hospitals, accommodation, public and private paying patients, boards of management and hospital committees, administration, personnel, hospital planning and construction, fire prevention, dietary, purchasing of supplies, nursing service, social service, and accounts are dealt with at length, besides many more. One could hardly name any phase of hospital work that has been overlooked. Particularly valuable are the chapters on income, appeals, and contributory schemes, as coming from one who is an authority on hospital finance. Some of the details, notably those relating to hospital construction, dietary departments, administration, finance and nursing, are not entirely applicable to the hospital systems as they exist in Canada, but, apart from this, the basal principles are the same here as in Britain, and we no doubt can learn much from their experiences in the Old Country.

We highly commend this book and think it might well find a place in the library of all hospitals. It is *sui generis*.

The Emperor's Itch. R. Friedman. 99 pp., illust. \$1.50. Froben Press, New York, 1940.

There seems to be an "itch" at the present time for writing on topics having a medical connotation, particularly if they concern notable characters and have some public appeal. Dr. Friedman is a dermatologist and a historian, and so may be excused. It has been said that 40,000 books have been published about Napoleon. The work under comment is unique in that, apparently, it is the forty thousand and first work on "The Little Corporal", but more unique (if such an expression be permissible) in that it discusses for the first time an ailment which is thought by some to have had an important bearing on Napoleon's life. Every one is familiar with his characteristic pose, in which he stands with his right hand tucked into his shirt front. The itch, and he had to scratch! This theory is discussed thoroughly in the light of the available facts and with discrimination. Dr. Friedman comes to the conclusion that the malady was dermatitis herpetiformis and not scabies. The illustrations are most interesting.

The 1940 Year Book of Public Health. Edited by J. C. Geiger. 560 pp. \$3.00. Year Book Publishers, Chicago, 1940.

In this volume the literature on Public Health for the year 1939 and part of 1940 is reviewed. The Year Book Publishers Inc. have added Public Health as a subject for annual review, and this book now joins the Practical Medicine Year Books, making the 14th volume in the annual series.

The publishers use the term "readers' digest" to define the book, and this term is an adequate description of it. It conveys an idea of its value and its limitations.

Dr. Geiger has culled from a voluminous literature 421 articles on Epidemiology, Nutrition, Housing, Laboratory, Industrial Hygiene, Administration, Health Education and Child Hygiene. Another editor would have chosen different articles and both would miss publications which to a third editor would seem important. This reviewer, for example, misses a reference to the important volume on Virus and Rickettsial Diseases published by the Harvard University Press early in 1940: Vernon's worthwhile book on Health in Relation to Occupation is not mentioned. Little is also said on the controversy as to the significance of the tuberculin test, and the new patch test is barely referred to.

The book is not a substitute for independent reading, but it does bring to the attention of the reader many articles which he would otherwise miss. There is a good index.

Edinburgh Post-graduate Lectures in Medicine. Vol. I, 513 pp., illust. 10s. 6d. Oliver & Boyd, Edinburgh, 1940.

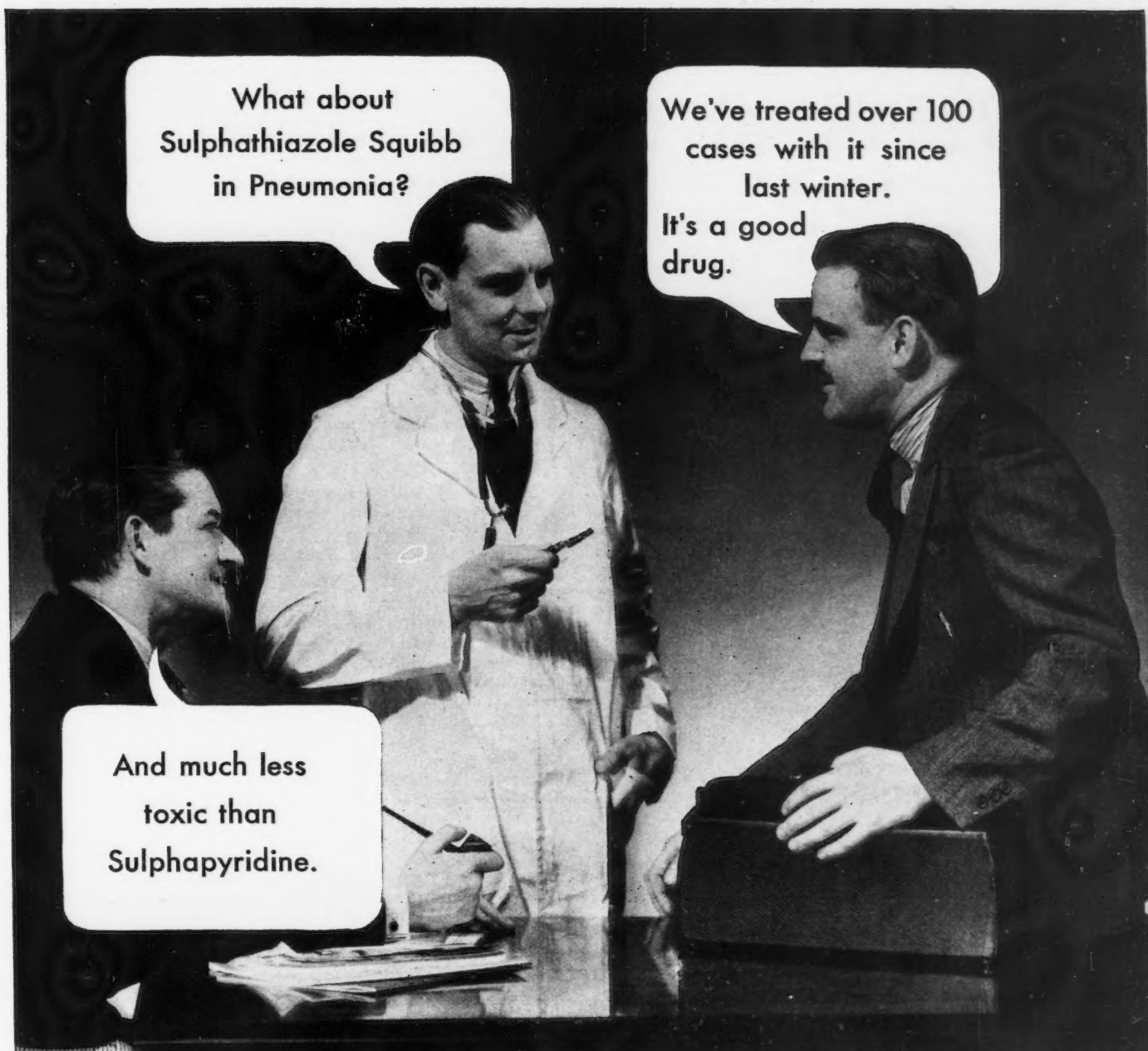
This is a collection of lectures delivered under the auspices of the executive of the Edinburgh Post-graduate Courses. They cover a wide range of subjects both medical and surgical. The lecturers are all well known names in British medicine, and the book forms a valuable collection of well chosen and excellently presented material.

Graduate Medical Education: Report of the Commission on Graduate Medical Education. 296 pp. The University of Chicago Press, 1940.

On December 4, 1937, the Commission on Graduate Medical Education was organized. The Commission undertook "to formulate the educational problems and principles involved in the continuation of medical training for a period of years after graduation and the adequate training of specialists, and to make recommendations for methods whereby those in practice, general and limited, may keep abreast of new developments. . . ." The present volume is to be considered as a companion book to the "Final Report of the Commission on Medical Education", published in 1932.

The first chapter is a summary of the findings and recommendations of the Commission so that the interested reader can, in a short space, secure a general understanding of the point of view of the members. The Commission believe that the internship should provide a real educational experience and that it should be regarded as a part of the basic preparation for general practice or for undertaking advanced training in a specialty. The term "residency" is used to mean a progressive and graduated educational experience designed to enable a physician to make himself proficient in a special field of practice. A period of three-years' residency is the commonly accepted pre-requisite for admission to examination by a specialty board. The Commission view post-graduate medical education, which aims to keep the physician abreast of current knowledge, as falling into two categories: (1) for general practitioners, and (2) for specialists.

From this summary, it will be obvious that if the recommendations are to be put into effect a new relationship between the medical school and the hospital is called for as regards co-operation in educational work for the intern, resident and graduate, particularly the first two. There is also implied the need for development



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within the hospital of an organization of the intern and resident services on an educational basis.

This book should be carefully read by all those interested in and responsible for graduate medical education.

The book is well printed, carefully indexed and easy to handle.

Anatomical Analysis of Sports. G. Hawley. 191 pp., illust. \$3.00. A. S. Barnes, New York, 1940.

In this age of specialization, especially with reference to participation in athletic competition, much emphasis has been placed upon the technical details of how movements might be performed most economically and efficiently. In certain forms of sport, *e.g.*, track and field, swimming, etc., knowledge of and ability to perform movements according to proved techniques undoubtedly leads to a vast improvement in performance.

Miss Hawley's book does not attempt to replace the many technical treatises upon the "form" or movements found most suitable for various sports, but rather supplements them by an analysis of the muscular action involved. Nor is it a treatise which might be classified as Kinesiology; rather, it attempts to bridge the gap between various sports techniques or methods and the fundamental sciences.

Several sports are analyzed, the muscular actions are recorded, and correct "form" is stressed so that they might be performed with the greatest efficiency. At the same time, attention is directed to the effects of certain habitually assumed positions upon body posture.

The book is of value to teachers of Physical Education in the study of Applied Anatomy. Its appeal to the medical profession would have been much enhanced if some consideration had been given to the physiological and psychological effects of different types of muscular exercise of a non-competitive nature.

Borrowed Children. Mrs. St. Loe Strachey. 149 pp. Commonwealth Fund, New York (British edition, published by John Murray, London); The Musson Book Co., Ltd., Toronto; cloth, \$0.85, paper, \$0.50, 1940.

This very excellent publication tells the story of what happened in England when they were called upon to deal with the many problems which arose out of the evacuation of over 700,000 unaccompanied children in the early days of September, 1939. Most of the difficulties which were met, outside of the problems associated with transportation and placement, were those which experienced workers would expect to find among children deprived of the security of their own homes and naturally concerned about the safety of the parents whom they had left behind. The feeling of insecurity expressed itself in the usual behaviour problems, and what was done by way of organization to solve these problems and other difficulties is admirably told.

Proceedings Third Annual Symposium. Northwestern University Medical School, Dept. of Industrial Medicine. 125 pp. \$2.00. Chicago, 1939.

The Proceedings form a valuable monograph dealing with certain departments of Industrial Medicine. The sub-titles indicate its scope, covering non-tuberculous pulmonary disease, kidney diseases of middle life, soap—an irritant and its rôle in occupational dermatitis, common beneficial uses of poisonous metals and alkaloids.

Field Ambulance Organization and Administration. J. H. Neil. H. K. Lewis, London, 1940.

This little volume printed in 1919 has been amended and revised to February, 1940. There are numerous editions. The introduction indicates those parts of the manual which have been superseded. It is a manual with which all active and prospective officers of the R.C.A.M.C. should have more than a passing acquaintance.

Directory of Medical Specialists, 1939. Edited by P. Titus. 1573 pp. \$5.00. Columbia University Press, New York, 1940.

This directory, the only one of its kind, is of considerable value. It lists about 14,400 specialists certified by the twelve special American Boards. A few Canadian names are included, but it is essentially an index of specialists in the United States.

Ways to Community Health Education. I. D. Hiscock. 306 pp. \$3.00. Commonwealth Fund, New York, 1939.

This volume is one which will be used as a handbook by those responsible for directing programs of public health education. For those interested in this field the book is recommended without reservation.

Bibliography of Swimming. Compiled by F. A. Greenwood. 308 pp. \$4.25. H. W. Wilson, New York, 1940.

A very useful bibliography on all matters relating to swimming, including resuscitation of the drowned.

Hæmorrhoids and their Treatment. K. Blond. Tr. by E. S. Lee. 140 pp., illust. \$4.50. Macmillan, Toronto, 1940.

This is the first English edition of "Hæmorrhoids and their Treatment" by Kasper Blond, of Vienna, and translated by E. Stanley Lee. It deals with the injection treatment of ano-rectal diseases, by one who is well qualified to write this valuable book.

The author has introduced several original and effective methods of presentation, especially dealing with the importance of the portal system in the cause of ano-rectal diseases, and the rôle of varicose rectal disease in gastro-intestinal and biliary disease. The injection treatment of hæmorrhoids, using a 20 per cent quinine solution, is the author's method of choice. The section on the etiology and treatment of fistula and fissure by the injection of quinine solution will be new to many readers and should stimulate interest in this form of treatment.

The book should be read by all who are interested in proctology, as it will appeal more to the expert than the general practitioner.

Simplified Diabetic Manual. A. Rudy. 2nd ed., 216 pp., illust. \$2.00. Barrows & Co., New York, 1940.

All that a diabetic needs to know about his condition can be found here. The book is written simply with explanations of some factors causing diabetes. The symptoms are clearly described. It discusses the urine tests and insulin administration. Food tables and recipes are given in detail. The section on vitamins contains helpful reference tables. Recipes suitable for various nationalities are given, such recipes that will please Germans, Swedes, Greeks, Italians, Armenians and Jews, but since all are now eager to become Canadians or Americans these special dishes may not be so necessary.

The following sentence should be written in standing orders in all schools of nursing—"When caring for diabetics hot water bags should be placed on top of the blankets to avoid burns."

In the discussion of giving insulin the author says, "Occasionally both insulins are given in one injection". If this is done the entire dose is protamine insulin because protamine exists in excess in the solution and will change unmodified insulin to protamine insulin when the two are mixed. If an easy way in treating diabetes is as good for the patient as the hard way, the patient should use it, but if not the patient must not be misled into a wrong procedure in order to save trouble.

The expression "insulin coma" is used. It is more desirable to use "insulin reaction" and reserve the word "coma" for unconsciousness due to acidosis.

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Diphtheria Toxoid	Staphylococcus Toxoid
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This book is useful for the diabetic patient, the dietitian and the nurse. The diabetic specialist will not find in it anything new but he will find it useful to put in the hands of his patients.

The Injured Back and its Treatment. Edited by J. D. Ellis. 377 pp., illust. \$5.50. C. C. Thomas, Springfield, 1940.

This work consists of a series of nine chapters on different aspects of the subject. Such are: Notes on the evolution of man's posture; Backache, a symptom of visceral disease; Routine examination of the injured back; The management of recent compressed fracture of the vertebral bodies without cord injuries; Neurological aspects of back injuries; The rôle of articular aspects of back injuries; Faulty body mechanics and back injuries; Relation of trauma to certain inflammatory degenerative diseases of the spine and, finally, the treatment of minor injuries (by several authors).

The exposition as a whole deals with general principles in diagnosis and treatment and is an excellent summary of the current literature on the subject. The bibliography will also be found valuable by those studying the problem more completely.

This book constitutes a valuable addition to the medical literature, and carries the subject much further than Mennell's monograph on Backache. Readers dealing only with occasional cases and not read in the literature may not find the presentation easily digested, but it will fill an essential place in the library of orthopaedic and industrial surgeons. The book is beautifully bound, printed and illustrated.

The Bacteriology of Public Health. G. M. Cameron. 451 pp., illust. \$4.00. McAinsh, Toronto, 1940.

This handbook is a distinct contribution to the field of Public Health microbiology, covering as it does the relationship of, not only bacteria, but, as well, the protozoa, the viruses, the yeasts and moulds, to diseases of importance to the public health. The scope of the work covers not only temperate climate diseases, but tropical diseases also. The first two chapters on "Historical Review", and "Development of Knowledge" form a splendid introduction, outlining among other things the fundamental principles of diagnosis, prophylaxis and therapeutics as far as these relate to the microbiology and immunology of the organisms concerned and including chemotherapy.

The remaining twenty-three chapters deal comprehensively with organisms or related groups of organisms in relation to diseases produced. The matter is succinct, comprehensive and up-to-date. The style is very readable. This book can be recommended, especially to public health nurses and workers, medical students, and the medical profession generally. While not specially a laboratory book, it deserves a place in the libraries of laboratories whose work covers that of public health.

The book is well illustrated, well indexed, and carries an exceptionally full bibliography.

The Virus—Life's Enemy. K. M. Smith. 176 pp. \$2.25. Macmillan, Toronto, 1940.

The importance of viruses as causes of disease has long been recognized, but only within recent years has the study of their fundamental nature been intensified. Here is a book which is a summary of all that is known about these substances, brought up to date. The historical background of virus investigation in relationship to vegetable and animal life is first discussed. The various methods of studying viruses, especially the procedures used in attempts to isolate these filterable bodies, are explained. The spread of virus infections is dealt with and the relationships of viruses and insects, and of viruses and living cells, are extensively discussed.

Finally, there is a summary of the more important virus diseases encountered in animals and human beings, scientifically written in language anyone can understand.

BOOKS RECEIVED

Textbook of Histology. H. E. Jordan. 8th ed., 690 pp., illust. \$7.00. Appleton-Century, New York, 1940.

Biological Symposia. Edited by J. Cattell. Vol 1, 238 pp. \$2.50. Jaques Cattell Press, Lancaster, Pa., 1940.

Shell Shock in France 1914-1918. C. S. Myers. 146 pp. \$1.35. Macmillan, Toronto, 1940.

Landmarks and Surface Drawings of the Human Body. L. B. Rawling. 8th ed., 98 pp., illust. 8s. 6d. H. K. Lewis, London, 1940.

Cancer. Various authors. 284 pp. Committee on Publication, Boston, 1940.

Electrocardiography. C. C. Maher and P. H. Wosika. 3rd ed., 334 pp., illust. \$4.00. Williams & Wilkins, Baltimore, 1940.

Common Contagious Diseases. P. M. Stimson. 3rd ed., 465 pp., illust. \$4.50. Macmillan, Toronto, 1940.

St. Thomas's Hospital Reports. 2nd series, vol. 4, 198 pp., illust. 10s. St. Thomas's Hospital, London, 1940.

International Clinics. Edited by G. M. Piersol. N.S. 3, vol. 2, 365 pp., illust. \$3.00 a vol. J. B. Lippincott, Montreal, 1940.

Electrocardiographic Patterns. A. R. Barnes. 192 pp., illust. \$5.00. C. C. Thomas, Springfield, 1939.

Ophthalmology. B. Chance. Clio Medica Series, No. 20. 240 pp. P. B. Hoeber, New York, 1939.

Asthma and the General Practitioner. J. Adami. 157 pp. \$1.75. Macmillan, Toronto, 1940.

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